NOV 17 1960
B 868404

FLIGHT

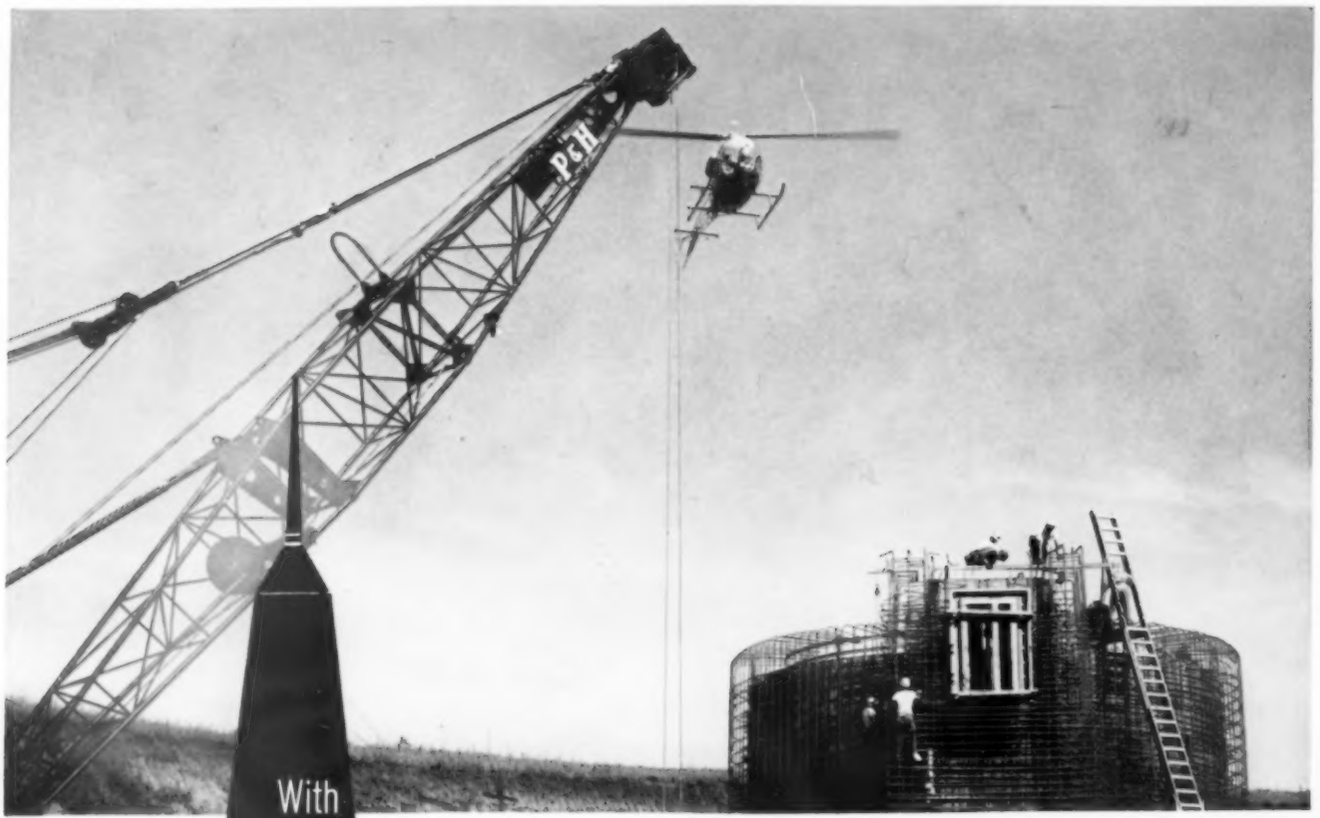
MAGAZINE

NOVEMBER, 1960
50 cents

THE LIBRARY OF
CONGRESS
SERIAL RECORD
NOV 28 1960
COPY

AERO COMMANDER 680F

(See page 34)



With national security at stake... missile base contractors fly

BELLS

There's a countdown underway throughout America as construction of our missile bases accelerates from day to day. Time is critical . . . completion of the program is vital to national security and the Bell helicopter is *on the job*, speeding construction projects to completion *on schedule*.

One example: Western Construction Corp., on site at Lincoln Air Force Base, Nebraska, has turned "the impossible" into a time-saving reality by taking to the air in a Bell. Supervisors had been spending three days traveling by automobile to cover eight of 12 "hard" underground Atlas launching bases spread over a 500-mile road network. With their Bell, the same travel takes only two-and-a-half hours. Supervisory travel overhead has been cut 66 per cent.

Western has put a second Bell to work to gain double effectiveness. They've found Bell helicopters so dependable, so economical to operate and maintain that they expect full payout of their investment in one year. What's more, the high availability (99 per cent) of their Bells gives Western a time advantage unequalled by other types of transportation.

The helicopter is a natural for turning *waste time* into *pay-off* time in many fields of work. Let us send you full information on the Bell's total flexibility for your business. Write or phone: Commercial Sales Manager, Bell Helicopter Company, Dept. 7.7, Fort Worth, Texas.

Bell's 47J-2 can carry four persons and fuel for 200 miles at altitudes over 10,000 feet.

BELL HELICOPTER COMPANY

bh

FORT WORTH, TEXAS • A DIVISION OF BELL AEROSPACE CORPORATION • A TEXTRON COMPANY

NOV 17 1960

ROLLS-ROYCE

CIVIL AND MILITARY

GAS TURBINES

are in service with

or on order by

OVER 80 AIRLINES

AND 28 AIR FORCES

Rolls-Royce of Canada Limited, Box 1400, St. Laurent, Montreal 9, P. Q.

ROLLS-ROYCE LIMITED • DERBY • ENGLAND

AERO ENGINES • MOTOR CARS • DIESEL AND GASOLINE ENGINES • ROCKET MOTORS • NUCLEAR PROPULSION

Pueblo...a Preferred Stop for Rocky Mountain Fliers

Jack C. Keeler, Pueblo's Director of Aviation since 1945—licensed pilot and a past Director of Amer. Assoc. of Airport Execs.

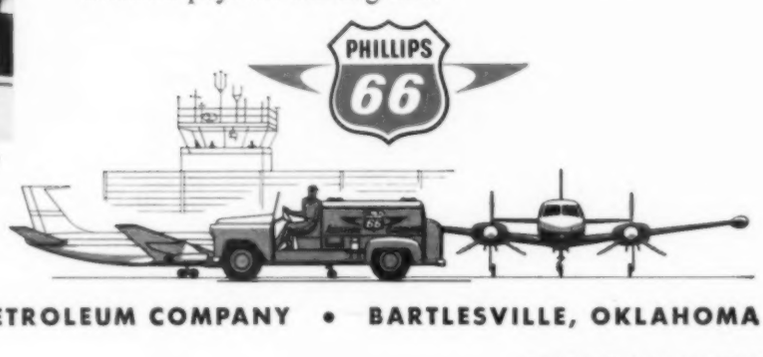
The Memorial Airport for the City of Pueblo, Colorado . . . complete and up-to-date facilities, just five miles east of town.

Pueblo's "airline-type" service with Phillips 66 mobile refuelers is prompt, courteous, and thorough.

Modern Terminal building features spacious restaurant with view of field traffic and the Rocky Mountains.

Pueblo, known as "the Industrial Capital of the Rocky Mountains," is justifiably proud of its well-run Memorial Airport. Served by a total of ten daily flights (Continental, Frontier, and Central Airlines) . . . this municipal field is also popular with non-skeds, business and private fliers. It's well equipped with three lighted runways over 8,300 feet long, high intensity lights, ILS, 24-hour combined station/tower (local and area approach), Omni, LF range, an FAA radar-weather station, and crash-fire-rescue equipment manned around-the-clock.

At Pueblo, 24-hour refueling with dependable Phillips *66* Aviation Gasoline (grades 80-, 91-, 100-, and 115-octane) is fast and efficient. In the terminal, you will find an excellent restaurant, car rentals, charter service, lounge, and friendly people. For overnighters there are tie-downs or hangars large enough for DC-3's . . . and excellent motels nearby. General aviation pays no landing fees.



AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA

AIR Report
Significant Trends and News

HIGH-PERFORMANCE BEECH "BARON" development from the Travel Air will be announced as competitive to the Cessna 310 Twin. It will feature 260-hp. fuel injection engines in thin, squarish nacelles.

CESSNA WILL ADD THREE MORE TWINS TO ITS LINE during 1962-63, dealers were told at their annual meeting last month. First addition, 5-place Model 320, is advanced version of 310F but features turbosupercharged fuel-injected versions of engines now in 310, with slightly enlarged cabin. It is expected to hold sea level power up to about 15,000 ft. and cruise 240 mph. or more at altitude. For 1962 offering, it will probably be announced in mid-1961. . . . Second offering will be Cessna's radically-designed 4-place "light light" twin, Model 336, also for 1962. It features a tractor engine and propeller on the nose with a pusher engine-propeller behind the baggage compartment and on the center line, has high wing, twin-boom tail and fixed landing gear. It resembles a Model 182 with second engine and prop installed behind rear seat. Engine power has not been finalized but is expected to total more than 400 hp. for both engines. No multi-engine rating will be required to pilot it for the use of tandem engines eliminates engine-out yaw of conventional twin with wing-mounted engines. Tandem twin design is believed to offer promise in reducing production costs for twins. Cessna 336 will compete with Piper Apache. No performance details yet. . . . Third new Cessna twin will be Model 410 for 1963, a 6-10-place with twin piston engines of undisclosed power but believed to be in 250-mph., 8,000-lb. or heavier category with cabin slightly larger than new Beech Queen Air. This one is expected to be followed by an advanced version with pressurized cabin, turbine power, 300-mph. cruise.

NEW PIPER CHEROKEE, low-wing, all-metal, 4-place, 160-hp., tricycle-gear replacement of the Tri-Pacer, was unveiled at Piper Aircraft's dealer meeting at Grand Bahama last month. It will sell for $9,995. Preliminary details and specifications include cruising speed of more than 130 mph., 36-gal. standard fuel capacity with optional built-in capacity of 50 gals., and useful load of 1,015 lbs. with gross weight of 2,200 lbs. and empty weight of 1,185 lbs. First production model is scheduled for February off Piper's new production line at its Vero Beach, Florida, plant. Howard Piper, vice president of research and development, said the Cherokee features gentle, docile flight characteristics for the novice businessman just learning to fly. Its low wing has large dihedral for stability. Tricycle gear is fixed. Its engine is the 4-cyl. Lycoming O-320-B. Design simplification is said to have reduced manufacturing costs, with 1,200 parts as compared to over 1,600 parts which went into the Tri-Pacer. For first photo and details of Piper's new bargain-priced 2-place Colt, see page 31.

ROLLS-ROYCE PRODUCTION, SALES AND SERVICING OF CONTINENTAL AIRCRAFT PISTON ENGINES IN EUROPE will be established as a result of a license issued to Rolls-Royce by Continental Motors Corp., Muskegon, Mich. C. J. (Jack) Reese, Continental president, said the license gives R-R exclusive rights for all Continental aircraft piston engines and parts in Europe and for R-R-built Continental engines in Australia and New Zealand. All Rolls-Royce parts will be interchangeable with those from the U. S. The Continental engines included in the license are air-cooled horizontally-opposed 4 and 6-cylinder types ranging from 65 to 400 hp. The license includes future engine developments by Continental.

FLIGHT MAGAZINE

NOVEMBER, 1960 VOL. 49, No. 11

THIS MONTH'S COVER is a portrait of the new 680F Aero Commander, first deliveries of which began recently. Powered by two 380-hp. fuel-injected and supercharged Lycoming IGSO-540-B1A engines, it has a 3,200-lb. useful load at a gross weight of 8,000 lbs. and cruises 240 mph. For details, see page 34.

—(FLIGHT MAGAZINE Photo.)

Air Report—SIGNIFICANT TRENDS AND NEWS 5

Just Among Ourselves—EDITORIALS: RADIO REQUIREMENTS; A GOOD LOW-COST AIRPLANE AT LAST; SIMPLIFIED CAR 19

Dozen Models in New Cessna Line—DETAILS ON NEW CESSNAS FOR 1961 ANNOUNCED AT SALES MEETING 26

New Piper Colt for $4,995—BARGAIN PLANE FOR SPORTS AND TRAINING HAS TRICYCLE GEAR AND SIDE BY SIDE SEATING . . . 31

Compass Course for National Pilots Association—PILOTS ELECT OFFICERS, HEAR EXPERTS AT ANNUAL FLY-IN . 32

Super Twin—the New 680F—BY TOM ASHLEY—NEW AERO COMMANDER ADVANCES LIGHT TWIN INTO CONVAIR SPEED CATEGORY 34

Mining Company Commander Flies 1,200 Miles Every Day—WORLD'S BUSIEST LIGHT TWIN PROVES COMPANY PLANE RELIABILITY 37

354 Planes at FAA Fly-In—AIRMEN SEE RESEARCH CENTER ACTIVITIES IN ATLANTIC CITY 46

Bendix Fuel Injection for 180-550-hp. Engines—BY D. D. HOLLOWAY—HOW NEW PORT INJECTION SYSTEM WORKS . . 50

Meyers to Sell 2-Placer for $7,995—PRODUCTION REVIVED FOR HIGH-PERFORMANCE MEYERS 145 54

New Business in the Hangar—NATIONWIDE ROUNDUP OF INTERESTING DEVELOPMENTS IN BUSINESS FLYING 60

Airmen's Calendar—COMING EVENTS 65

GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; LOUISE ROBERTSON, Circulation; E. H. PICKERING, Consultant; P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas — Telephone TAylor 3-6191.

FLIGHT MAGAZINE, November, 1960, Vol. 49, No. 11. Published Monthly. Publication Office, P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas. Price 50 cents single copy. Subscription rates: United States, one year, $3.00; two years, $5.00; three years, $6.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879.

Copyright, 1960, by Air Review Publishing Corporation.

What does the PROFESSIONAL Pilot think of KING?

Ed Wigton, Pilot
Seaboard Allied
Milling Corp.

"My King KY-90 gives me the feeling of confidence a pilot needs..."

"As a professional pilot, I investigated the King KY-90 Transmitter/Receiver thoroughly before I had one installed in our Company Cessna 310... Authorized radio repairman told me the KY-90 was well designed and constructed for dependable operation. Pilots using it told me the KY-90, with its ten-watt power, performed beyond anything they had seen for its size and weight. Upon checking Coast Geodetic Enroute Charts, Terminal Area Charts and the Flight Information Manual, I discovered that the 90 channels covered by the KY-90 are all that are authorized for use under 24000 ft. in our type of operation. Additional frequencies and the extra weight they would require would not only be wasted, but would cost a great deal more. Now, after using my KY-90 as primary communications for 215 trouble-free hours, I can honestly say that I wish *all* my radio equipment was King."

Ed Wigton

Here's the 10-WATT KING KY-90 Transmitter/Receiver that Ed Wigton likes so well. You also will appreciate the 10-watt power that provides extra "reach" and louder, clearer signal... the simple, front-panel controls... the small size (only 3"x6½"x8") ...the lightness, only 8 pounds... and the reasonable cost, only $795.

Ask Your KING'S MAN...

Authorized King Dealers are carefully selected. Each has a completely equipped radio shop with personnel highly qualified to install and maintain aircraft quality electronic equipment. Each King Dealer is competent — and willing — to discuss fully with you the radio equipment you need and make realistic, economical recommendations.

KING RADIO CORP.

9700 West 75th St., Merriam, Kansas

Builders of TOMORROW'S Aircraft Equipment TODAY!

QUANTITY PRODUCTION OF THE AEROCAR FLYING AUTOMOBILE is planned by Moulton Taylor, president of Aerocar, Inc., Longview, Washington. Taylor was in Wichita, Kansas, last month looking for contract production facilities to build his FAA-certificated 2-place flying auto, powered by a 4-cyl. Lycoming O-320 engine derated to 143 hp. shafted to a pusher propeller in the tail. It is said to cruise 100 mph. at 2,100-hp. gross weight. Wing and tail are easily removed to convert it into an auto, and wings fold for towing trailer-fashion between airport and town.

CESSNA COMMERCIAL AIRCRAFT SALES reached approximately $56,000,000 during the company's fiscal year of 1960, which ended Sept. 30. This was about 20% greater than its fiscal 1959 commercial aircraft sales volume. The company's total sales were down from $105.7 million to $103 million, with military and agricultural-industrial hydraulics products sales and those of a subsidiary, Aircraft Radio Corp., also down.

AERO COMMANDER, INC., is the new name for the manufacturer of the Aero Commander. The firm was formerly known as Aero Design & Engineering Co. Tom Harris, vice president and general manager, said the new name more closely associates the company with its product.

THREE FOR ONE BEECH STOCK SPLIT has been approved and directors of Beech Aircraft Corp., last month declared a 40-cent cash dividend. Mrs. O. A. Beech reported the firm's sales of fiscal 1960, ending Sept. 30, totalled $98 million for an $8 million increase over fiscal 1959. She credited increased commercial aircraft sales, which were at an all-time high, for the growth. . . . **WILLIAM M. MORGAN**, retired USAF major general, has been elected vice president-military relations of Beech Aircraft Corp.

AIR TRAFFIC CONTROL HONORS for the year were presented at last month's annual meeting of the Air Traffic Control Association in San Francisco. Highest awards for "controller of the year" went to Clyde I. Denham of the Midway Tower, Chicago, and James J. Boyle of the ARTC at Washington, D. C. Denham was cited for his response to a May Day distress call from a pilot lost in the clouds. He relayed the call to a TWA airliner in flight, whose pilot, Capt. Don Aagesen, found the lost single-engine pilot and escorted him to a safe landing. Boyle received his "Oscar" for the air safety and efficiency record amassed by the 330-man ARTC center in Washington, of which Boyle is chief controller. Denham and Boyle received bronze medallions. Scroll awards as "controller of the year" and "facility of the year" went to

KING
KX-100

2 RECEIVERS and a 10-WATT TRANSMITTER!

Simultaneous

NAV and COMM

in a single, compact unit!

ONLY the KX-100 provides *simultaneous* crystal-controlled navigation and communication in a single unit! ONLY in the KX-100 do you have a 10-watt, 90-channel Transmitter-Receiver *and* a separately tuned 100-channel omni receiver! Now, you can keep your omni or localizer tuned on while talking to airways, approach or departure control or tower. Available for either 14 or 28 volts. Lightweight—under 10 pounds! Compact—only 5 x 6¼ x 8". Performance features unequalled at twice the price!

COMMUNICATION SECTION

Transmitter: 10 watt rf output, covers all assigned COMM channels, crystal-controlled. Mike gain and sidetone adjustable. Crisp, clear speech with a long reach.

Receiver: 90 channels, crystal-controlled. Tunes synchronous with transmitter—adjustable squelch and volume. DCS position on frequency selector provides transmission on 126.7 mc, reception on 120.7 mc.

NAVIGATION SECTION

Receiver: Covers all omni and localizer channels, crystal-controlled. One microvolt sensitivity with all circuits designed especially for navigation accuracy. Low impedance navigation signal to operate the King KI-200 Omni-Localizer Converter-Indicator.

PRICE 14 volts **$1095**

KING KI-200 OMNI-LOCALIZER CONVERTER-INDICATOR

Receives navigation tones from NAV receiver in King KX-100 and provides steering indication on either Omni or Localizer operation, switching automatically/electronically as Omni or Localizer station is received. Self-contained, transistorized unit—no bulky converter—can be professionally placed with flight instruments, not in radio panel! Guaranteed accuracy is 2 degrees.

PRICE **$645**

Sold through franchised dealers in U.S. & Canada
—Export by REA International, 80 Broad St., N. Y.

KING RADIO CORP. 9700 West 75th Street, Merriam, Kansas

Builders of TOMORROW'S Aircraft Equipment TODAY!

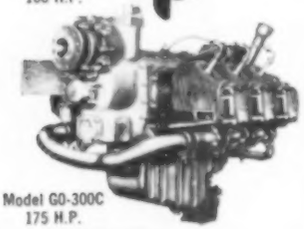
CONTINENTAL AIRCRAFT ENGINES

PROGRESSIVE ENGINEERING AND QUALITY MANUFACTURE, PLUS THE BACKING OF ESTABLISHED WORLD-WIDE SERVICE, MAKE CONTINENTAL—NOW, MORE TRULY THAN EVER BEFORE—

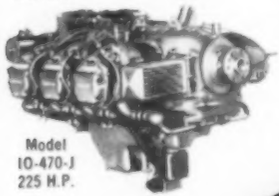
FIRST NAME IN UTILITY PLANE POWER

After engine dependability, the most important thing to consider in choosing an airplane is the service behind it—the facilities maintained by its makers to keep it in the air at lowest cost. And here, as on the basic score of engine stamina, planes with Continental power rate uniformly high . . . Owners of such aircraft are sure of finding genuine Continental parts and competent mechanics the world over . . . They benefit in other ways, too, from Continental's policy of backing those who build and those who use Continental-powered products.

Model O-200-A
100 H.P.



Model GO-300C
175 H.P.



Model
IO-470-J
225 H.P.

26 MODELS—65 TO 310 HORSEPOWER

MODEL	HP	RPM	CYL	WT*	OCTANE
A65	65	2300	4	172	73
C90	95	2575	4	188	80/87
O-200-A	100	2750	4	190	80/87
O-300-D	145	2700	6	267	80/87
GO-300-C, D	175	3200	6	309	80/87
E185	205	2600	6	326	80/87
E225	225	2650	6	363	80/87
O-470-G	240	2600	6	432	91/96
O-470-J	225	2550	6	380	80/87
O-470-K, L	230	2600	6	404	80/87
O-470-M	240	2600	6	410	91/96
IO-470-C, G	250	2600	6	430	91/96
IO-470-D, E, F, L, M	260	2625	6	428	100/130
IO-470-H	260	2625	6	431	100/130
IO-470-J, K	225	2600	6	402	80/87
IO-470-N	260	2625	6	423	100/130
TSIO-470-B	260	2600	6	465	100/130
GIO-470-A	310	3400	6	455	100/130

*All weights approximate

Continental Motors Corporation
AIRCRAFT ENGINE DIVISION
MUSKEGON • MICHIGAN

Master Sgt. Cecil I. Basham, Jr., USAF, for an FAA-military joint training program he conceived and carried out, and to the Love Field Tower, Dallas, for its controllers' achievements in safety and efficiency during a long period of tower and equipment modifications. In addition, certificates for meritorious service went to Wylie V. (Pop) Moore, Love Field Tower; W. C. Lawson, Columbia (S. C.) Tower; J. R. Hoe and W. W. Cope, Jr., San Jose (Calif.) Tower; H. W. Graham, Washington (D. C.) ARTC; the San Juan (Puerto Rico) ARTC, the 1992 AACS Squadron's Tower and GCA unit in France and the Jacksonville (Fla.) ARTC. The Association's first industrial achievement award went to Intercontinental Electronics Corp., Westbury, N. Y., for pioneering development of radar-to-television bright displays for air traffic control.

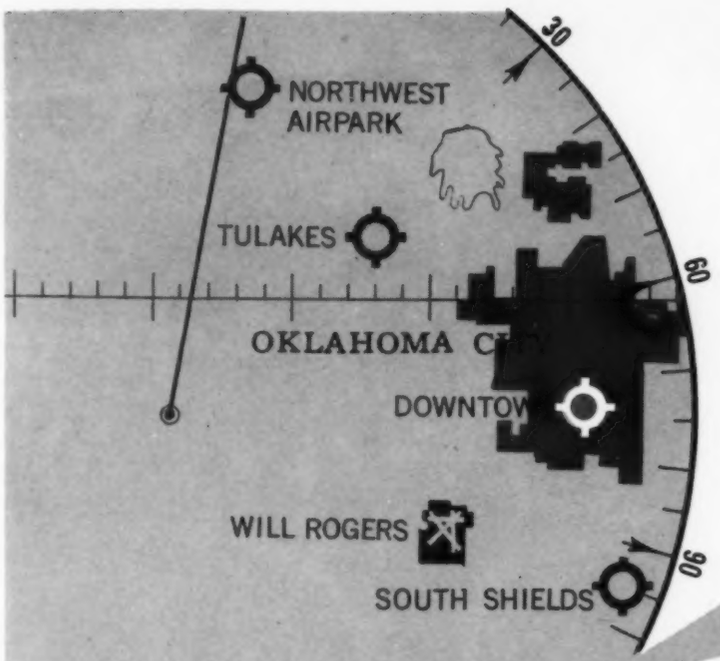
SMALL, LOW-COST ATC TRANSPONDER FOR ALL BUSINESS PLANES is under development by the Hazeltine Corp. under FAA contract and was exhibited at the FAA's Atlantic City Fly-In last month. Designed for 150-mile range, all 64 ATC codes and position identifications and for marketing and servicing by Narco, the unit is ⅓ the size, (or about 13 by 8 by 4 ins.) ¼ the weight (or about 12 lbs.) and ⅛ the power drain (or 2 to 4 amps) of existing transponders. It would automatically respond to ATC ground radar interrogations, identifying the aircraft by code on the ground scope. It is expected to be available in 1961.

SHERMAN M. FAIRCHILD last month became acting chief executive of Fairchild Engine & Airplane Corp., following resignation of J. H. (Slim) Carmichael as president.

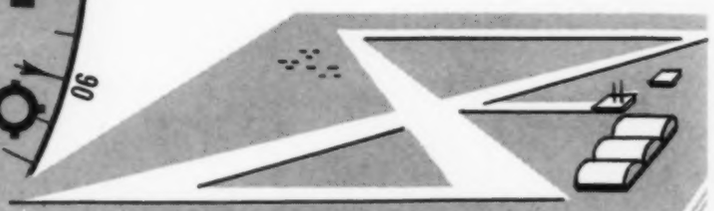
BOEING-VERTOL'S NEW MODEL 107 TWIN-TURBINE HELICOPTER AIRLINER made its first flight last month at Morton, Pa. First twin-turbine copter to enter the flight portion of FAA certification, it can carry 26 to 30 persons and cruise more than 155 mph.

NEW AERO COMMANDER DEALER in San Diego and Imperial Counties of California is Crest Aviation of San Diego, headed by C. Robert Bilbrey. It will open new sales and service facilities on 40 acres at Montgomery Field. . . . **NEW BEECH DEALER** in the Long Beach, California, area is Belmont Aviation, Long Beach Airport. It is headed by John W. Hancock, is an outgrowth of the former Haskell Flying Service.

FLYING FUNERAL DIRECTORS OF AMERICA is newest group of flying businessmen to organize. Thirty flying funeral directors attended the organizing meeting at Denver last month. Officers are Fred Vontrager,



IT'S ALMOST LIKE LANDING ON YOUR HOTEL



WHEN YOU LAND AT

DOWNTOWN AIRPARK

5 MINUTES FROM DOWNTOWN IN

OKLAHOMA CITY

Famous for Personal Service — taxi — rental cars — hotel reservations — business appointments

- Big enough for anything (From a "puddle-jumper" to a DC-3
- Two paved runways (3600 feet N-S; 2600 feet NE-SW)
- Lycoming distributors
- Night lighting
- 24-Hour Service
- 80-87, 91-94 & 100-137 Octane gas
- Hangars and tie-down
- Complete maintenance and repair shops
- Restaurant service 6:00 a.m. 8:00 p.m.
- Call Unicom 122.8

phone MElrose 4-1456 *before you buy*

DOWNTOWN *Airpark* INCORPORATED

1701 S. WESTERN • OKLAHOMA CITY, OKLAHOMA

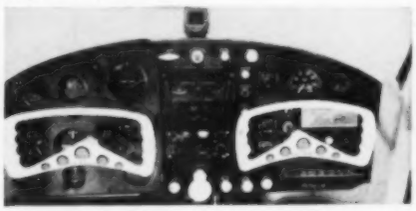
Ready now to "high-tail it" into 1961: the pert new Cessna 150 with fresh new styling... greater visibility...increased cabin comfort– and proven dependability.

See column next page—and then your Cessna dealer. At the airport, look for the Cessna pennants, sign of extra Cessna service at over 375 dealers around the world. Here: Executive Aircraft, Kansas City, Mo.

MEN WHO KNOW AIRPLANES FLY CESSNA

Beauty is just one of many good reasons to buy the Cessna 150

CHECK: the repositioned landing gear for improved ground handling. *Check:* back windows enlarged 15% for better visibility. *Check:* new, more luxurious cabin . . . new optional individually sliding adjustable seats . . . increased elbow room with flush door handles and semi-flush window latches . . . optional child's seat or full 80-pound baggage compartment.



AND CHECK: new "eyes-on-the-road" instrument panel with function-grouped flight instruments and radio controls.

LOOK AROUND. You won't find such a versatile plane at such a low price anywhere: $7,495 with std. equip., f.a.f. Wichita.

WANT A SAUCY SPORTS PLANE? Check the 150's bold good looks and quick, easy maneuverability. You'll discover that half the fun of pleasure trips is in flying this sprightly sportster.

NEED AN EFFICIENT TRAINER? You get such advantages as side-by-side seating . . . Land-O-Matic . . . huge Para-Lift flaps . . . High-Gliding wing—and many more easy-to-fly features that help make your teaching job easier.

HOW ABOUT A BUSINESS PLANE? You get speeds up to 124 m.p.h. and range up to 630 miles—plus a low price and low operating costs. (One quick example: you get 23 miles per gallon at 120 m.p.h.)

FOR A FREE DEMONSTRATION RIDE, call your nearby Cessna dealer now. (See Yellow Pages.) Look at all 12 new models. Also ask him about his money-saving finance and lease plans. Or for further information, write: Cessna Aircraft Co., Dept. FM-1, Wichita, Kansas.

CESSNA

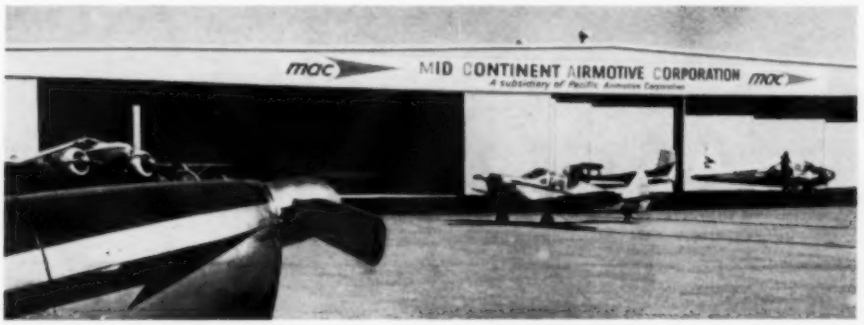
Coshocton, Ohio, president; Jack Jerrett, Toronto, Canada, vice president, and A. B. Eckersell, Rigby, Idaho, secretary-treasurer. Flying morticians interested in joining should contact Mr. Eckersell, 101 West Main St., Rigby, Idaho.

CESSNA AIRCRAFT COMPANY has promoted W. G. (Bill) Robinson to be corporate public relations director, reporting to Dwane Wallace, president, and R. L. (Randy) Griesinger to be public relations manager for the marketing division, reporting to Bob Chatley, sales promotion director.

PLAN TO STANDARDIZE FLIGHT OPERATIONS AT ALL TOWER-EQUIPPED AIRPORTS was proposed last month by FAA. The proposal would create an "airport traffic area" taking in the airspace below 2,000 ft. within a radius of 5 miles from the center of each tower-equipped airport. Any pilot not intending to land at the airport would be prohibited from flying through the specified airspace unless he received the tower's permission to do so. Also, airspeeds in the area would be limited to not more than 180 mph., and two-way radio communications would be required at all airports where a tower is operated by FAA or military authorities, although aircraft without two-way radio could obtain prior authorization from the tower for landing or taking off from a controlled airport.

V. E. (GENE) LARIMER has been elected president of Golden Gate Aviation, Inc., Beech distributor at Oakland, California, according to John W. Myers, chairman of both Golden Gate and its parent company, Pacific Airmotive Corp. Larimer was formerly with the Beech factory and was vice president of Atlantic Aviation Corp., and general manager of its New York Division before joining Golden Gate.

(Continued on page 14)



New Jefferson County Airport Opens At Denver

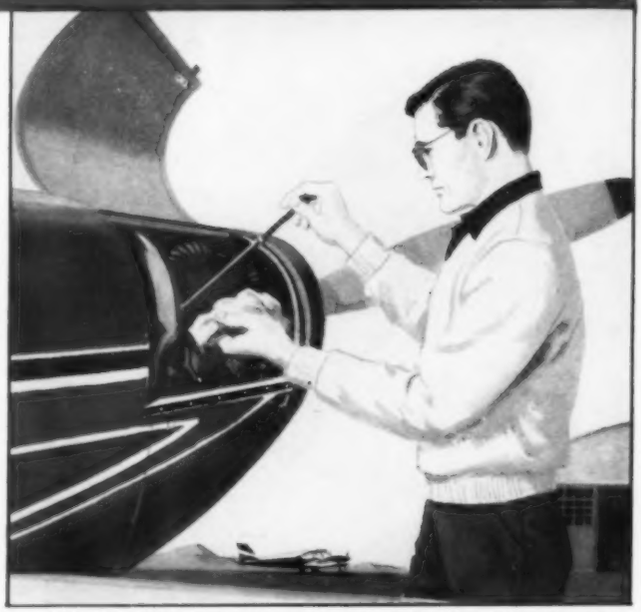
A NEW general aviation facility, Jefferson County Airport, located 15 miles northwest of Denver, was opened last month with over 500 business and private aircraft operators guests at a fly-in breakfast given by Mid-Continent Airmotive Corp., exclusive aircraft service operator at the new field. A subsidiary of Pacific Airmotive of Burbank, Mid-Continent operates a 33,600-sq. ft. hangar and 17 T-hangars at Jefferson, which features a 6,000-ft. runway and planned development of a 1,400-acre industrial park. Mid-Continent offers complete aircraft overhaul and line maintenance service, including all grades of gasoline and turbine fuel and oil.

Participating in opening ceremonies (left to right) were Colorado Senators John Carroll and Gordon Allott; FAA Engineer Henry Kimball and H. A. Smith, Mid-Continent Airmotive president.

ESSO

WING TIPS

FIX NICKS. Check metal propellers regularly for nicks and have them filed smooth as soon as possible. Nicks can develop into cracks, and cracks can result in the breaking of blades while in flight.



SET TIGHT. When checking the oil, make sure the dip stick is set in place securely. If it isn't in tight, the stick can work loose and oil may spray over the plane, causing serious loss of oil and a hazardous flying condition.

CHARGE IT. With an Esso Credit Card, you can charge gasoline, oil, lubricants – plus tire and battery service, landing fees, overnight in-transit storage, and minor repairs. In addition, you can now charge Esso marine and automotive products with the same card.

This convenience is yours at selected airports from coast to coast, and Canada, too. Naturally, top flight service is provided by your dependable Esso Aviation Dealer, whose service is designed for *your* flying pleasure and safety.

ESSO STANDARD, Division of Humble Oil & Refining Company

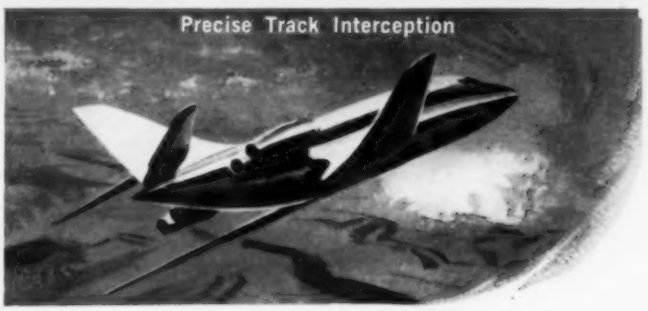
Highways or Skyways..."ESSO RESEARCH works wonders with oil"

Now, Fly Your Plane Anywhere . . .
Face Any Navigating Problem with Confidence

Low Frequency Navigation

Pinpoint Instrument Approaches

Remote Area Operations


Precise Track Interception

with the NEW

ARC CD-4
COURSE DIRECTOR

Steering Data from Four Methods of Navigation, Presented on ONE Indicator

The ease with which ARC's CD-4 Course Director adapts itself to every area of operation adds a new dimension to your flying technique.

SELECT MODE, SET TRACK, CENTER NEEDLE

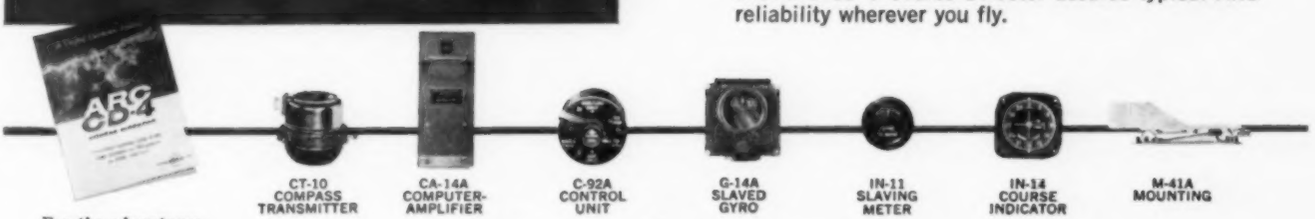
With the CD-4, you simply select the mode of operation... VOR, ILS, ADF, or Magnetic Heading... set in the desired track information, and steer the plane to center the vertical needle. Instantaneous steering information is then computed and continuously displayed on one indicator. All enroute flying, holding, and terminal approach procedures are identical.

NO MENTAL GYMNASTICS

Exacting mental calculations are no longer required. The CD-4 does it for you! It tells you how to intercept and maintain the desired course. Recalculation of headings to compensate for wind is not necessary. Your only requirement is to keep the needle on the cross pointer indicator centered.

And... the total added weight to your aircraft is only 8.5 pounds.

Engineered to the highest standards of quality, the ARC CD-4 Course Director assures typical ARC reliability wherever you fly.



For the advantages and specifications of the complete CD-4 System, see your ARC Dealer, or write for free brochure.

Aircraft Radio Corporation
BOONTON, NEW JERSEY

RESEARCH, DESIGN, DEVELOPMENT AND PRODUCTION OF ELECTRONIC EQUIPMENT SINCE 1928

NEW VTOL-STOL AIRCRAFT DESIGN BY CHANCE VOUGHT utilizes Pratt & Whitney J-60 jets paired with turbofans. Articulated flaps on wing trailing edge vary lift for vertical or horizontal flight. Girl is Jeanine Brown.

AIR REPORT

(Continued from page 11)

CITY OF CARLSBAD, N. M., HAS PURCHASED AIRCRAFT DIVISION OF FORNEY INDUSTRIES, which has been marketing the 2-place Ercoupe under the name Fornair. To bring new industry to its city, Carlsbad has a new plant which it leased to Air Products Co., Inc. Air Products will manufacture the plane in the Carlsbad plant and market it as the "Aircoupe of Carlsbad." W. C. Wright, Air Products executive vice president, and A. D. Witchel, marketing director of its Aircoupe Division, said first deliveries from the new Carlsbad plant begin in January, with plans to produce four times as many Aircoupes as were manufactured in the old plant at Ft. Collins, Colorado.

MOONEY has a PROBLEM!

Mooney's problem is MOONEY POPULARITY! Mooney continues to be the fastest growing aircraft manufacturer in America.

People all over the world are switching to Mooney . . . and Mooney has met the "happy problem" with added facilities and increased production in its modern, rapidly expanding plant.

Why the switch to MOONEY?

Never has a business-family plane been such a rewarding investment—in pleasure, comfort and safety—as the Mooney. It has spirit, speed, style and stability plus lowest initial purchase price and unmatched savings in operating costs.

NOW is the time for you to make the switch to the best for less. The best deal you have ever made will put you at the controls of Mooney's remarkable, easy-to fly Mark 20A.

NOW is the time to trade your transportation troubles away . . . see your Mooney dealer today . . . or write

Mooney AIRCRAFT, INC.
Kerrville, Texas

These reports from Mooney owners tell why more people are switching to Mooney

"I'm confident that Mooney has a great future. An outstanding product backed up with progressive plans ahead is the reason I've become a Mooney distributor." WALTER J. IMBRULIA, Hayward Airport, Hayward, Calif.

"I swapped my 225 h.p. plane for the 180 h.p. Mooney Mark 20A and I save enough on gasoline alone to pay for all my maintenance." DR. MAURICE A. LEMMONS, O.D.; Ozona, Texas.

"Modern styling with smart, clean design makes the Mooney a plane of beauty and prestige. I like its speed and maneuverability." CHARLES C. WALLACE, 3809 Montrose Drive, N. Chevy Chase, Md.

"I traded away 120 m.p.h. performance and got 180 m.p.h. at no increase in cost. It's amazing how much more productive time I now have." EDWARD ROSKELLEY, president, Mid-Cities Broadcasting Corp. Odessa, Texas.

Plane, Train or Limousine?

(none of these, this is a helicopter!)

Looks like a conference room, doesn't it? Well, it is in a way. The cabin of this new turbine-powered Sikorsky S-62 was designed by Raymond Loewy to make every trip conducive to meetings, study, work and even rest.

The turbine engine not only contributes to this atmosphere with its smooth, quiet operation but also has an unequalled record of reliability to recommend it. And because the mechanical components of the S-62 have been proven in over 1,000,000 hours of flight, periods between overhauls are four to five times longer than would normally be expected of new components.

This nine-passenger, boat-hulled Sikorsky S-62 is the newest addition to the family of helicopters you so often see in the news transporting government dignitaries both here and abroad. As it does for them, a Sikorsky helicopter will cut your executives' traveling time considerably.

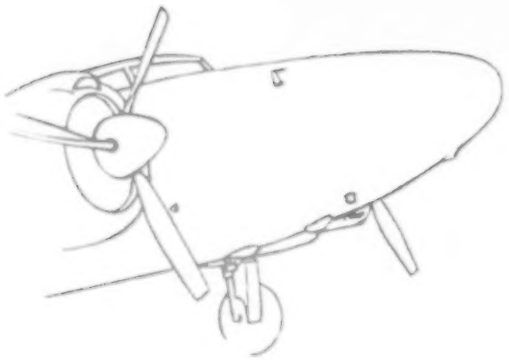
So today, jot a note to Sikorsky Aircraft on your letterhead and a representative will call to show how your company can gain in *business,* in *time,* in executive *power* and in *prestige* with a new Sikorsky S-62 executive helicopter.

A New World of Mobility by

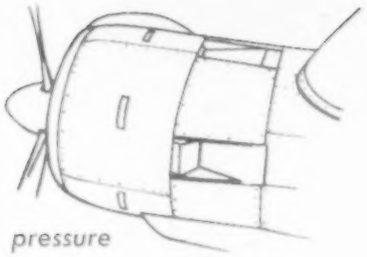
IKORSKY AIRCRAFT

Stratford, Connecticut

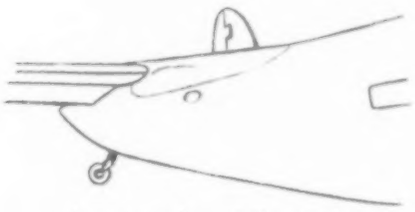
A Division of United Aircraft Corporation



Radome and air speed system



Streamlined pressure cowling, improves performance.



Improved saddle back design
(picture windows optional)

Tail cone modification

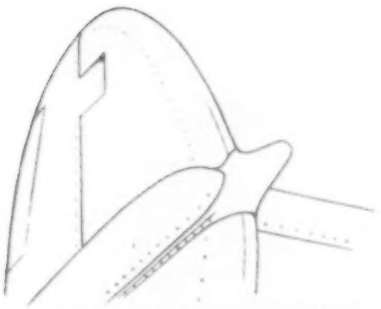
Dalaero

by

DAS

Trailing edge modified. 230 gal. auxiliary fuel tank each wing

Rear landing gear doors close tight with landing gear up or down. Spot brakes, Decelostat.



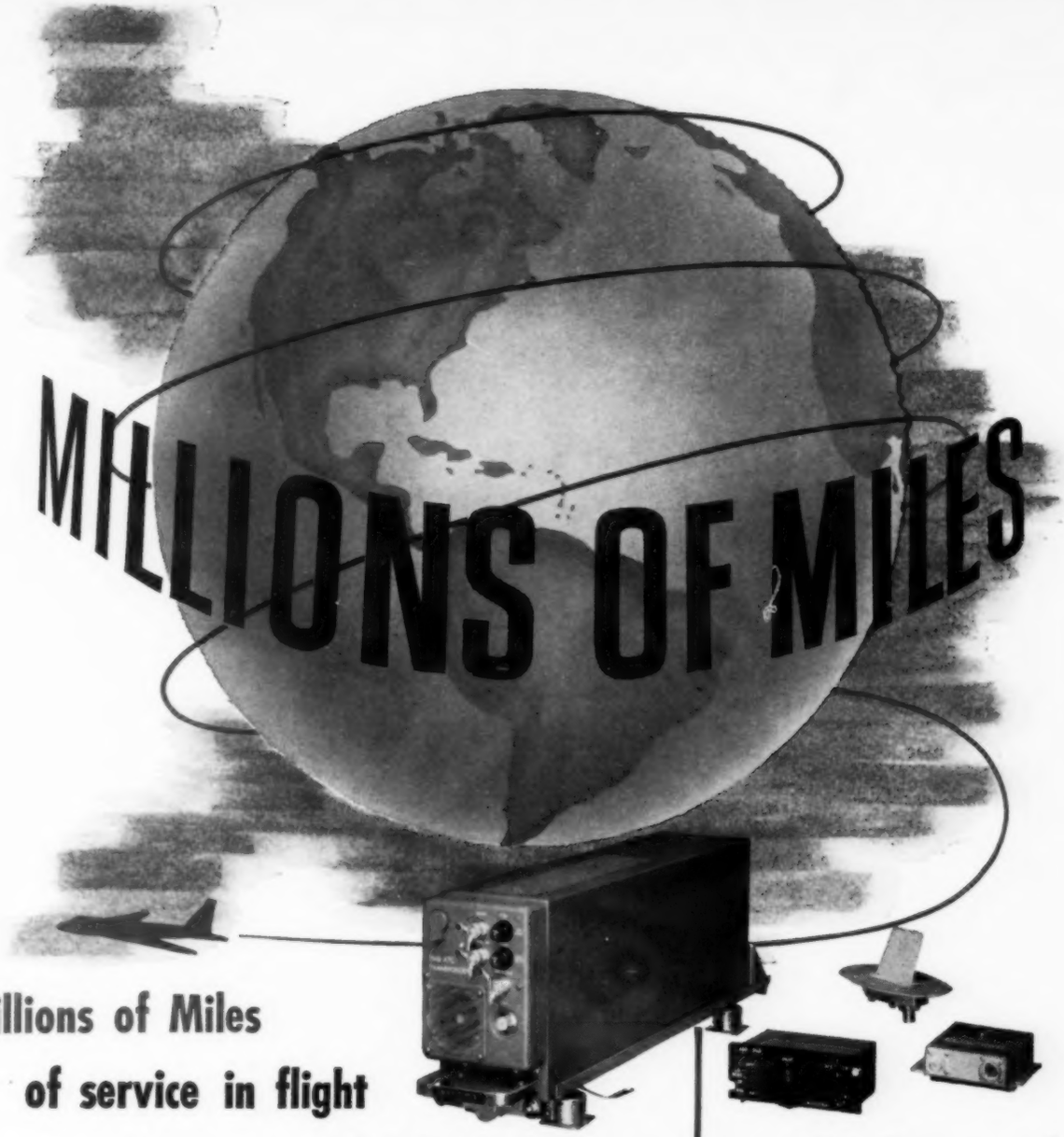
Note stabilizer short tips and fin stabilizer probe fairings

Standby rocket take-off assist

Dalaero as designed by Dallas Aero Service incorporates all the basic advantages of Lodestar design plus the latest performance, speed and safety developments . . . making it the finest executive aircraft in its class.

Complete One-Stop Service on Convenient Love Field

DAS **DALLAS AERO SERVICE**
W. F. LONG, PRESIDENT
3300 LOVE FIELD DRIVE • PHONE FL 2-2641 • DALLAS 35, TEXAS



Millions of Miles of service in flight proves the reliability of the *wilcox* ATC Transponder

■ Most recent proof of the unfailing performance of the Wilcox ATC Transponder occurred during the demonstration of the 3 pulse Sidelobe Suppression System to United Kingdom personnel at the National Aviation Facilities Experimental Center at Atlantic City, New Jersey.

■ Also, airline service records of Delta, Eastern, Pan American and Trans World Airlines substantiate the superior performance of the Model 714 Transponder. Other users, such as the U. S. Weather Bureau and the F.A.A., have enjoyed similar performance experience.

■ To identify your aircraft . . . save time . . . solve traffic control problems, you can *count on* the Wilcox 714 Transponder. For detailed performance data . . . prices . . . and delivery, write, wire or phone.

The *wilcox* Transponder Function Tester

■ provides the pilot positive indication of his aircraft's being interrogated from the ground when the panel-mounted indicator light glows.

■ provides an instantaneous means of checking the transponder's operating condition either in flight or on the ground. Pilot simply activates a panel-mounted selector switch . . . when indicator light glows he is assured transponder is functioning.

■ weighs less than 1 pound complete!

wilcox

ELECTRIC COMPANY, INC.
Fourteenth & Chestnut Sts.
Kansas City 27, Mo., U. S. A.

FIRST IN THE JET AGE!
with Jet Age Joe, Esq.
With all the big things going on in its shops and warehouses, Southwest Airmotive still accents the little things that make a man feel important—like an office and a stenographer when he needs 'em in a hurry between flights.
Lolette Cotten and the Jet Age are growing up at the same time. Frankly, I developed somewhat earlier, in the Age of Gas-Filled Balloons.
It's appropriate, though, that the three of us—Miss Cotten, the Jet Age, and I—got together at Southwest Airmotive. The dreams of youth and the reality of experience have blended here since long before she was born!

Southwest Airmotive Co., Dallas

1st with Jets

AIRPLANES ● ENGINES ● SERVICE ● SUPPLY

Parts Outlets: Denver, Houston, Kansas City, St. Louis

Just among ourselves

EDITORIALS

Radio Requirements

CONSIDERABLE light has been shed on the problem of aircraft radio, which precipitated a rhubarb upon announcement by the FAA earlier this year that the time had come to consider all radio to be used for IFR operations should be manufactured under TSO (technical standard orders) and the prediction that 50-kilocycle spacing would be forthcoming in view of the very crowded frequency situation under the present 100-kilocycle spacing.

Due to very inept handling of the announcement by the FAA and subsequent poor reporting by the press, a lot of owners feared that their present expensive communications and navigation equipment would be made obsolete by the threatened requirements.

As it now stands, the radio manufacturers and the airframe people got together and, through a series of meetings with FAA officials, the air is substantially cleared and the bogeyman has gone away. The VFR pilot is not affected and need no longer suffer from consternation and confusion. The IFR pilot can look to the day, still in the future, when he will be faced with increased cost for more frequencies, especially if the radio manufacturers have to provide a tolerance in the crystals from the present .01 to the threatened .005 being proposed.

All of us, including the FAA, must face up to the reality that more and more general aviation pilots are going IFR and that there is a tremendous amount of "limited" IFR flying with limited-channel, non-TSO'd radio equipment. There is no way in the world to regulate performance of any radio equipment. Of course, the government can establish standards but who can guarantee that the equipment will work or what regulation could ensure that it will work after permanent installation? By the same token we all must admit that we are running out of frequencies and that 360 channels and 50-kc spacing are inevitable.

What the industry complains about is the arbitrary language and approach the FAA made in this case to a problem that should be settled more by the factors that have always controlled the normal growth of general aviation — such as demand of the flying public for improved aircraft radio with more channels, which in turn moves the manufacturer to provide such equipment. The arbitrary attempt by the government to set an empirical date for change-over to certain equipments is unacceptable.

A lot of good has issued from the rhubarb. Thousands of airplane owners and the industry itself are more alert to the frequency problem as traffic increases, especially in IFR operations. A whole new look into the unused parts of the spectrum which should be released to general aviation is being taken. The Federal Aviation Agency has learned an important lesson in the matter of consulting with the industry and associations representing the industry before jumping out of the weeds with new proposals without prior notice or consultation.

As it stands now, it appears that present equipment with 100-kc spacing will be usable for years to come, at least to 1968, and beyond that if need be. If present equipment is satisfactory to many users for their particular type of flying, then they, the owners, will determine its efficiency. If present equipment, with its known limitations, is not satisfactory, then it's normal that demand will produce what the customer wants and needs, just as demand has produced better airplanes down through the years. Beyond working with the industry to see that we properly handle our growing air traffic and look to the future in anticipating this growth and the requirements in the light of both volume and systems to be used, the Federal Government has no business promulgating regulations that the laws of supply and demand render useless and unnecessary.

A Good, Low-Cost Airplane At Last

AIRPLANE peddlers are well acquainted with the fact that most new airplane sales involve a trade-in, similar to the automobile business. The pattern of airplane ownership is to start out in a small way with a small plane, then graduate to bigger and better airplanes as the demands for utilization increase. Pilot proficiency is also quite a factor in the market; as a pilot becomes more experienced and seasoned, he reaches for higher-performance airplanes.

So it is that the basic foundation of our burgeoning utility airplane business is the novice pilot with his first airplane, a small new or second-hand job with which he builds up flying time and whets his appetite for something better. The light twin market over the past five or six years is the classic example of this obvious evolution.

Everybody agrees that one of the weakest spots in our civil aircraft market since the end of World War II has been the absence of a low-cost tricycle gear trainer or "sportplane." The experts will tell you that the reason manufacturers shy away from such a craft is it can't make any money. A small, cheap airplane might sell like hot cakes but it doesn't return much in dollar volume.

Now comes Bill Piper with the major breakthrough to prove the experts wrong. His newly announced two-place Piper Colt has tricycle gear and will sell for $4,995. The announcement is one of the most significant pieces of news in postwar aviation.

Why? Mainly because it's getting more and more difficult to attract the modern businessman pilot to learn to fly in noisy, uncomfortable primary trainers built twenty years ago. Also, the low initial cost of the Piper Colt means that the cost of early dual and solo hours can be reduced in compari-

aero x-ray looks thru metal to find hidden flaws!

Aero X-ray "eyes" quickly spot trouble in aircraft before it starts. An X-ray checkup is fast, sure, complete. It eliminates strip-downs, excess downtime. Call Tom Lombardo for an appointment.

Telephone POplar 1-7721, Atlanta Airport, Atlanta, Georgia.

FAA Certificate 3650

Aero CORPORATION OF Atlanta

COMPLETE FACILITIES FOR CONVERSION, MAINTENANCE, OVERHAUL OF AIRCRAFT • HELICOPTERS • ENGINES PROPELLERS • CUSTOM INTERIORS

son with the other available modern lightplanes so often used in primary instruction. This not only means that the primary instruction phase will be more attractive to more people but it should also have considerable bearing on expanded airplane ownership at the early stages of the budding pilot's flying career. For example, many people learn to fly in a J-3 Cub but rare are the cases when such pilots go out and buy a Cub for their first airplane. The Piper Colt fills the need for that first, new airplane at a cost within the range of more people.

By filling in this vacuum in the lightplane spectrum, Piper is doing the whole industry a great big favor. While the Colt in all probability will not be a profit maker for Piper *per se*, its importance at the very base of the aviation market does have long-range profitable implications for everybody in aviation. We've sorely needed a good, cheap airplane for a long, long time. We now have it. It's mighty reassuring that one of the major manufacturers has had the foresight and the enterprise to build and market one.

Simplified CAR

THE FAA has started "a comprehensive program to consolidate and simplify its aviation safety regulations." The result promised will be a single simplified body of regulations that everybody can understand. This will require about two years to complete.

A specialist in the field of codification and classification, Professor F. Reed Dickerson of the University of Indiana Law School, has been employed as a consultant to analyze the rules and recommend what should be done to simplify the language and to eliminate duplicate and obsolete rules. There will be no "revision or substantive changes of the regulations themselves."

This latter statement is a pity. The good Professor should be given a couple of pilots, an airplane manufacturer and an airplane shop operator for the purpose of reducing the regulations themselves. Simply codifying the maze of rules developed over the past 34 years isn't going to be of substantial benefit to those of us who have to operate under the rules. It might put a lot of book publishers out of business who serve the trade and that's about all.

We remember the good old days back in the 1930's when all the rules were printed in one little book of about 30 pages. It was more like a

(Continued on page 67)

For full information about the RCA WEATHER RADAR get in touch with your nearest RCA authorized dealer listed below.

Aircraft Radio & Accessory Co.
Denver 7, Colorado

Airmar Radio Service, Inc.
Ronkonkoma, N. Y.

AiResearch Aviation Service Co.
Div. of Garrett Corp.
Los Angeles 45, California

Anderson Aircraft Radio Co.
Detroit, Michigan

Associated Radio Co.
Dallas, Texas

Atlantic Aviation Corp.
Wilmington, Del.

Butler Aviation, Inc.
Chicago 66, Illinois

Butler Aviation
Milwaukee 7, Wisc.

Butler Aviation
Washington, D. C.

E. Farnell & Co., Inc.
Palm Beach, Florida

Flightcraft, Inc.
Portland, Oregon

Florida Aviation Corp.
Miami 48, Florida

Gopher Aviation, Inc.
Rochester, Minn.

Minnesota Airmotive
Minneapolis 50, Minn.

Ohio Aviation Company
Dayton, Ohio

Piedmont Aviation, Inc.
Winston-Salem, N. C.

Qualitron, Inc.
Burbank, California

Reading Aviation Service, Inc.
Reading, Pa.

Remmert-Werner, Inc.
St. Louis, Missouri

Robbins Aviation Corp.
Pontiac, Michigan

Roscoe Turner Aeronautical Corp.
Indianapolis 21, Indiana

San Jose Avionics Co.
San Jose, California

Smith-Meeker Eng. Co.
New York 7, N. Y.

Southern Airways Company
Atlanta, Georgia

RCA®

Let this weather-seeing eye help cut costs

of operating your executive aircraft

The RCA AVQ-50 Weather Radar in your aircraft will help your pilot to bring you to destination in better time and greater comfort than ever before. In terms of money saved, this may be important; in terms of time saved, it may be priceless. Being able to "see" the weather far ahead enables your pilot to select a smooth path through or between turbulent areas and often avoid the long costly detours formerly necessary.

All this is important to the effective and economical use of business and executive aircraft and makes for greater flying safety and comfort. These are the reasons why weather radar has been designated as required equipment on most commercial airlines. Now, by making the AVQ-50 lighter, simpler and more compact, weather radar is made available to aircraft with weight, power and space limitations.

Any of the authorized RCA Dealers listed on the opposite page, will be glad to give you full information. Or write: Radio Corporation of America, 11819 W. Olympic Blvd., Los Angeles 64, California.

RCA®

The Most Trusted Name in Electronics

RADIO CORPORATION OF AMERICA

ONTARIO'S FLYING FIREMEN

Champion-fired Beaver bombs forest fire with 100 gallons of water from rotating steel drums atop pontoons—a unique fire-bombing system recently perfected by Ontario's Air Service. (Skimming lake for takeoff, drums fill with 1,000 pounds' water in 15 seconds via immersed snorkel.)

George E. Ponsford, Supervisor, Air Service Section, Ontario Department of Lands and Forests.

H. J. Phillips, Plant Supt., and W. B. Buckworth, Asst. Supervisor, (l/r) inspect shop at Air Service headquarters. Engineer Percy E. Parr, left photo, cleans Champion spark plugs for further service in bush planes. At right, Stock Clerk Bernie Gay and Stockkeeper Ralph Stone (l/r) check inventory of Champion's new REM40E *Foul-Resistant* spark plugs.

A behind-scenes report on the 45-plane Air Service section of the Ontario Department of Lands and Forests

by HERB FISHER

international aviation authority, veteran test pilot, author

In the far reaches of 412,000-square-mile Ontario Province, thunderheads poise for a fiery foray. A lone patrol plane takes note. Soon lightning is hop-scotching across hundreds of miles of rich forestland. Small fires spring up. Their *potential*—as demonstrated horribly in years past—is that of incalculable destruction to natural resources, human life . . .

On the heels of the lightning, however, comes the lone patrol plane. And before long, fledgling fires are quashed by tons of water dropped from the skies.

But one fire has escaped detection. It's a "sleeper"—just smoldering now. Days pass. Then winds pick up. And flames sweep furiously across the land.

Only a massive, co-ordinated effort can check this surging inferno. De-Havilland Otter and Beaver aircraft converge from distant points. Ground crews inch forward via canoe. The "flying firemen" water-bomb racing spearheads, trying to slow the fire's advance until ground forces can concentrate more men and equipment. Planes drop tons of supplies, including pumps to bring lake water into play on the fire. In this remote area, an effective ground assault would be impossible without highly efficient air support. In a few days, the fire is under control . . . and a holocaust, like the one of 1916 which took 224 lives, is averted.

Fire detection and suppression is an important duty of the Air Service section of the Ontario Department of Lands and Forests, headquartered at Sault Ste. Marie. Forty-five aircraft—37 Beavers, 7 Otters and a Widgeon, all float- or ski-equipped—operate from 28 bases scattered throughout the vast province. In 1955—a bad fire year—the planes logged 17,785 hours on fire duty!

But Ontario's "flying firemen" have many other duties, too. Flying in all kinds of weather, they wing swiftly across forest, lake, muskeg and subarctic tundra—a comforting influence in the lives of thousands of Canadians . . .

They assist in wildlife conservation—dropping fish in remote lakes; transporting beaver and other fur-bearers to places where such populations have dwindled; shadowing the trails of fish- and game-law violators; helping on trap-line inspections and wildlife censuses—moose to muskrat. They assist foresters in timber management and aerial survey, inspecting remote logging operations, transporting government timber scalers, carrying survey parties with food and equipment to and from wilderness bases. They do governmental research—like experimental salmon transplanting.

These winged watchdogs also assist provincial police in law enforcement and rescue work—man-hunts, lost children or tourists, drownings. They provide rapid transportation for investigation of bush accidents and crimes. They make countless mercy flights and rescue missions—everything from getting little polio victims to hospitals in time, to evacuation and supply work at flood sites.

The sturdy workhorse planes they fly were designed and developed by De-Havilland expressly *for* the Department's bush-flying requirements—to carry the greatest possible load with speed, range, and *short* takeoff/landing capability. Thus they can negotiate most of Ontario's quarter-million lakes! And despite extremely hazardous operating conditions at times, the accident rate of the 45-plane fleet remains amazingly low.

"That's because we put everything we've got into pilot training, aircraft maintenance, and aircraft parts and equipment," W. B. Buckworth, assistant Air Service supervisor, said. "Back in the bush, a pilot makes maybe 30 takeoffs and landings a day—and you combine *this* procedure with the all-weather flying we do, and let me tell you! *Those engines really take a beating!*

"There's not a bit of maintenance that goes into those engines that isn't the best we can do—and there's not a bit of equipment that goes into those engines that isn't the very best we can buy. And in our operation, we well *know* what's *best!*"

A spark plug's *dependable* performance is *critically important* to safe engine operation, for example—and pilots of the Air Service rely on *Champions exclusively*. Plugs are cleaned at 200 hours, then re-installed for another 300 hours. At the moment, the Air Service is equipping its Pratt & Whitney engines in Beaver and Otter aircraft with a new kind of Champion plug—the widely acclaimed REM40E *Foul-Resistant* plug. These plugs are self-cleaning: a two-prong electrode, longer core nose, and bigger bore allow combustion gases to keep firing tips blasted clean of fouling deposits. The foul-resistant Champions are ideal for hop-skip-and-jump operations like that of the Air Service—as well as for prolonged-flight operations.

"When you're flirting with blazing tree tops and tricky updrafts—or trying to wiggle in and out of tiny lakes with maximum loads—it's *especially* comforting to know your engine's going to deliver *instant* full-power when you put the throttle to it," Mr. Buckworth said.

Ontario's Air Service does, indeed, know how to get the *best* in performance from both man and machine . . . this watchdog outfit has been guarding the Northland for 36 years now, and its record is mute but monumental testimony to a job well done.

CHAMPION SPARK PLUG COMPANY
TOLEDO 1, OHIO

At Sault Ste. Marie—headquarters for maintenance, pilot training, administration—a Beaver is fitted with rotary water drums, latest in fire-bombing devices. With million-dollar hangar addition built in 1947 (capacity, 50 planes), headquarters base is self-sufficient—does *all* airframe, engine, and instrument overhaul, even manufactures own laminated-birch skis.

G. V. Robinson, Senior Air Engineer, finishes Pratt & Whitney engine overhaul with installation of Champion's new REM40E *Foul-Resistant* spark plugs.

Easy way to keep leading edges ice-free

Spray GLIDAIR 17-A Ice Repellent on leading edges, antennae, struts and props before taking off during marginal weather. The special silicone formula of GLIDAIR 17-A prevents ice formation because it polishes easily to a pore-free, hard, glossy surface . . . keeps you safe and worry-free.

Use GLIDAIR 17-A on landing gear and wheel wells, too. It guards against ice buildup from moisture picked up on wet, slushy runways. And GLIDAIR 17-A lubricates moving parts, protects them from corrosive salt and chemicals.

Keep several spray cans of GLIDAIR 17-A Ice Repellent handy for foul weather flight. Available through most private operators, or write for the name of your nearest distributor.

QUALITY Glidden PRODUCTS

GLIDAIR FINISHES FOR EVERY PURPOSE
Aviation Sales Headquarters
THE GLIDDEN COMPANY
1833 South Normal Avenue • Chicago 16, Illinois

GLIDAIR

A D M A

Ask about other superior GLIDAIR products: New G.V.A. fast drying, high gloss metal finish; GLIDAIR Super Renovite Plus high lustre, long lasting cleaner-polish; GLIDAIR Windshield Cleaner for restoring plastic windows and windshields.

ONE YEAR

Now! A full year's warranty stands behind the new "Gold Seal" Tactair T-3 autopilot. This is the most far-reaching warranty ever offered by any aircraft accessory manufacturer. It means a FULL YEAR warranty on all autopilot components ; a FULL YEAR warranty on the gyro horizon that keeps you unerringly straight and level and precisely controls angle of bank; a FULL YEAR warranty on the directional gyro with its exclusive Tactair course selector and heading lock. Chances are a Tactair autopilot in your airplane* will never need warranty service, but it's assuring to know that Tactair will replace or service free of charge *any* component to assure your continuing satisfactory enjoyment of the finest automatic pilot available for your airplane.

***Approved on most Beech's, Cessnas, Piper Apache.**

NOW! FULL-YEAR warranty covers new "Gold Seal" Tactair T-2 Levelair, also

TACTAIR
INCORPORATED
BRIDGEPORT, PENNSYLVANIA

New Cessna 310F twin has pointed nose caps and new third cabin window on each side. The 220-mph. 310F retains 260-hp. fuel-injected engines and 4,830-lb. gross weight. Price is up $2,550 to $62,500.

—(Cessna Photo.)

Dozen Models In New Cessna Line

EXPANDING its line of commercial business planes to 12 models for 1961, ranging in price from $7,495 to $79,960 and including its Skyhook commercial helicopter at the top of the line, Cessna Aircraft Company launched its new sales year this month with the slogan, "Top gun in '61."

Between 1,200 and 1,300 participants in Cessna's annual sales meeting at Wichita Oct. 30-Nov. 1 included over 1,000 Cessna salesmen, counting distributors, dealers and sales people from all over the world; 100 representatives of the press, as many representatives of suppliers and vendors who sell to Cessna, and 80 bankers, brought to the meeting by Cessna distributors.

As in recent years, this Cessna sales promotion was the business aircraft industry's largest and most colorful marketing "spectacular." Its Western theme exploited the "top-gun" slogan for market domination in sales during 1961. A giant Western wing-ding party set the scene with cowboy hats, ties and badges, a Western ballroom replete with swinging doors, sawdust on the floor, chuck wagon feed with tin plates and tin mugs, a Western band and Gay Nineties revue. It was followed the next morning by a downtown parade of 1,000 airplane salesmen led by a 120-piece band to the Forum Auditorium, where the stage was set as a Western barroom, Wichita Town's "Longbranch Saloon." From there it was a program of heavy "sell" all the way — topped by announcement of a bigger-than-ever contest this year for salesmen. In last year's sales contest $20,000 worth of merchandise prizes went to salesmen, ranging from golf clubs to sailboats.

Before the meeting was over, Cessna distributor-dealers flew home in about 400 new 1961 Cessnas valued at about $4,000,000 — exceeding last year's flyaway of about 350 planes valued at $3,500,000.

1961 Cessna Model 310F

Factory Data

Price	$62,500
No. Seats	5
Engines: 2 Cont. IO-470-D, 260 hp. @ 2,625 rpm.	
Gross Wt., lbs.	4,830
Empty Wt., lbs.	3,040
Useful Load, lbs.	1,790
Useful Pct. of Gr. Wt., %	37.1
Fuel Cap., gals.	102
Optional Fuel Cap., gals.	133
Oil Cap., gals.	6
Top Spd., mph.	242
Cr. Spd., 70% hp. @ 8,000 ft., mph.	220
Cr. Range, std. fuel, mi-hrs.	825-3.8
Cr. Range, opt. fuel, mi.-hrs.	1,070-4.9
Max Range @ 10,000 ft., opt. fuel, mi.-hrs.	1,340-8
Stall Spd., mph.	69
Rate of Climb, fpm.	1,800
SE Rate of Climb, fpm.	440
Service Clng., ft.	21,300
SE Svc. Clng., ft.	7,700
Take-off Run, ft.	800
Take-off Dist. to 50 ft., ft.	1,395
Landing Roll, ft.	620
Landing Dist. from 50 ft., ft.	1,720
Wing Area, sq. ft.	175
Wing Loading, lbs. sq. ft.	27.6
Power Loading, lbs. hp.	9.3
Span, ft.	36
Length, ft.	29.5
Height, ft.	9.93
Baggage Cap., lbs.	200

NOTE: Performance is for gross weight at sea level unless noted.

1961 Cessna Skyhawk and 172

Factory Data

	Skyhawk	172
Price	$11,475	$9,795
No. Seats	4	4
Engine: Cont., 145 hp. @ 2,700 rpm.	O-300-D	O-300-C
Gross Wt., lbs.	2,200	2,200
Empty Wt., lbs.	1,330	1,260
Useful Load, lbs.	870	940
Useful Pct. of Gr. Wt., %	39.6	42.7
Fuel Cap., gals.	42	42
Oil Cap., qts.	8	8
Top Speed, mph.	140	139
Cr. Spd., 70% hp. @ 8,000 ft., mph.	131	130
Cr. Range, mi.-hrs.	570-4.4	565-4.4
Max. Range @ 10,000 ft., mi.-hrs.	790-7.9	790-7.9
Stall Spd., mph.	52	52
Rate of Climb, fpm.	730	730
Svc. Ceiling, ft.	15,100	15,100
Take-off Run, ft.	780	780
Take-off Dist. to 50 ft., ft.	1,370	1,370
Landing Roll, ft.	680	680
Landing Dist. from 50 ft., ft.	1,115	1,115
Wing Area, sq. ft.	174	174
Wing Loading, lbs. sq. ft.	12.6	12.6
Power Loading, lbs. hp.	15.2	15.2
Span, ft.	36	36
Length, ft.-ins.	26-5.5	26-5.5
Height, ft.-ins.	8-8	8-8
Baggage Cap., lbs.	120	120

NOTE: Performance is for gross weight at sea level unless noted.

New to the Cessna line for 1961 is this Skyhawk fully-equipped version of the 4-place, 145-hp. Model 172 (below). The $11,475 Skyhawk has push button starter, vacuum system with gyros and other equipment which is optional for the 172. It cruises 131 mph.

—(Cessna Photo.)

In addition to the new 4-place, $79,960 Skyhook, Cessna's new models for 1961 include a Model 185 workplane and a new Skyhawk version of the 4-place Model 172. Of the new line, details were announced only for 5 of the models — the 310F twin, Skyhawk and 172, the 150 and the 185 Skywagon. The remaining models will be detailed later in public showings — they are the 210, the 182 and its Skylane version, the 175 and its Skylark version and the Model 180. The Skyhook was announced in the October issue of FLIGHT MAGAZINE.

Prices are higher on the 5 models detailed at the sales meeting and apparently they will be higher on the 6 models yet to be shown. The 310F twin is up $2,550 to $62,500, the Model 172 is up $345 to $9,795 and the Model 150 is up $245 to $7,495. The Skyhawk, an equipped version of the new 172, is priced at $11,475. The new Model 185 Skywagon, a heavier, more powerful development of the 180, is priced at $18,950, as contrasted to $14,675 for the 1960 Model 180C.

Model 310F

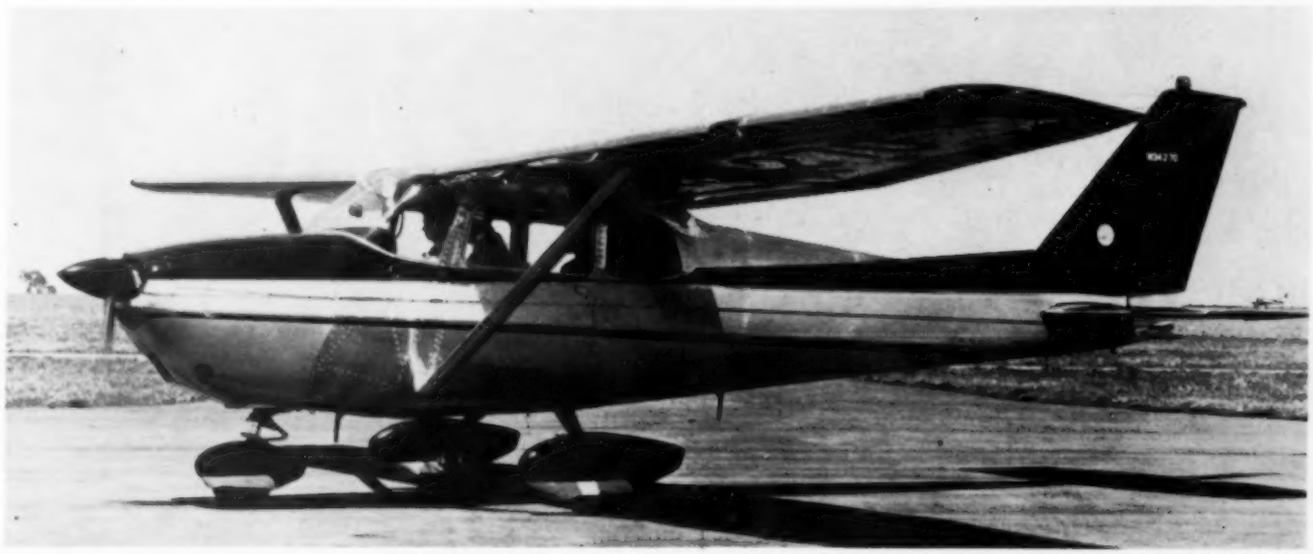
For 1961, Cessna has refined the 5-place, twin-engine Model 310F with several improvements but it remains basically the same as the 310D with no change in power plants, gross weight or performance. The 4,830-lb.-gross 310F offers 1,790-lb. useful load, tops 242 mph. maximum speed and cruises 220 mph. on 70% hp. at 8,000 ft. with its Continental, 6-cylinder, fuel injection IO-470-D engines rated at 260 hp. each at 2,625 rpm. Detailed performance is given in an accompanying table.

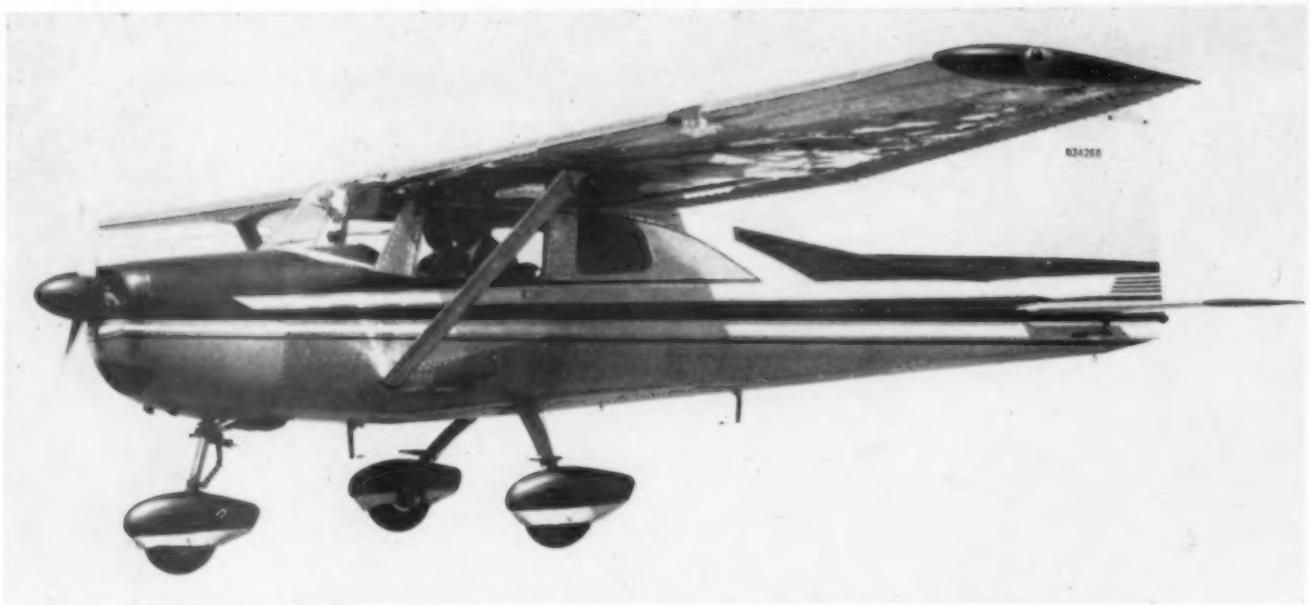
Pointed noses have been given the fuselage nose cap, the propeller spinners and the wingtip fuel tanks — these noses were all previously rounded. A new third window has been added on each side of the cabin for rear seat passengers. They are double-pane windows to minimize cabin noise.

New Scintilla "retard" type magnetos are used on the engines for faster and easier starting and two mag switches, a starting switch and optional oil dilution switch are combined

New Model 172 has new fuselage for 1961 with new streamlined windshield, new engine compartment, more comfortable cabin and shorter landing gear for improved ground handling. With 145-hp. Continental engine, it cruises 130 mph. and is priced at $9,795.

—(Cessna Photo.)





Cessna has improved its 2-place Model 150 with more cabin visibility, better ground handling with main wheels moved farther rearward and other refinements. The 100-hp. Model 150 cruises 121 mph. and sells for $7,495.

—(Cessna Photo.)

into one unit to simplify the pilot's starting procedure. With the new mags, a more convenient tachometer pickup source is obtained and the old-type magneto's tachometer generator is eliminated.

The 310F has an improved engine induction air box which allows removal of the filter without removing the engine cowling. The instrument panel anti-glare shield has been extended into the sides of the cabin for a wrap-around effect. The propeller anti-ice switch has been made more accessible and heater controls have been changed to provide easy adjustment of heat valves. Cessna's "blend temp" ventilating and cooling system has been improved with a revised heat duct system providing increased air flow, heat and windshield defrosting. The shape and location of cabin outlets have also been changed for more uniform distribution of heat and a large direct outlet has been added to allow fast warm-up on the ground. A valve control provided minute adjustments for passenger comfort at all altitudes and temperatures.

Front seats have a new simplified base of welded construction and an aluminum plate on the lower seat back protects against scuffing. New optional reclining seats with an improved adjustment are available for the center cabin area to replace the pilot seats previously used. Arm rests are easily removed. New interior styling harmonizes with the added visibility from the new rear windows. Upholstery and carpeting are in a choice of brown, red or green, with nylon warp seat fabric having interwoven gold thread and generous leather trim. Cabin sidewalls and luggage area are covered with gold leather. Ivory-colored headliner and curtains are of basket-weave wool with gold and silver threads as accent. Wall trim and upper side panels are in textured ivory polyplastex.

Adjustable individual seats and a child's seat for the Model 150 are pictured below. Note spaciousness for luggage and child's seat behind the two seats.

—(Cessna Photos.)

1961 Cessna Model 150

Factory Data

Price	$7,495
No. Seats	2
Engine: Cont. O-200-A, 100 hp. @ 2,750 rpm.	
Gross Wt., lbs.	1,500
Empty Wt., lbs.	950
Useful Load, lbs.	550
Useful Pct. of Gr. Wt., %	36.7
Fuel Cap., gals.	26
Oil Cap., qts.	5
Top Speed, mph.	124
Cr. Spd., 70% hp. @ 9,000 ft., mph.	121
Cr. Range, miles-hours	520-4.3
Max. Range, miles-hours	630-6.6
Stall Spd., mph.	50
Rate of Climb, fpm.	740
Svc. Ceiling, ft.	15,300
Take-off Ground Run, ft.	680
Take-off Dist. to 50 ft., ft.	1,205
Landing Roll, ft.	360
Landing Dist. from 50 ft., ft.	1,055
Wing Area, sq. ft.	160
Wing Loading, lbs. sq. ft.	9.4
Power Loading, lbs. hp.	15
Span, ft.-ins.	33-4
Length, ft.-ins.	21-6
Height- ft.-ins.	6-11
Baggage Cap., lbs.	80

NOTE: Performance is for gross weight at sea level unless noted.

Exterior paint styling is in 10 three-color combinations. Eight use ivory as trim and use brown with tan, red and beige, brown with light orange, dark green with tan, and gray with yellow. Two additional combinations are light blue trim with medium and dark blue striping and beige trim with brown and light orange striping.

The 310F is the latest of several versions of the basic 310 model, over 1,450 units of which have been produced by Cessna since it was introduced to the market in 1954. It is also used by the Air Force, whose latest order is for 35 of the new F models, to be known as the Air Force U-3B.

New 172 and Skyhawk

Cessna has effected changes in its popular 4-place, 145-hp. Model 172, including a new fuselage, and is marketing a fully-equipped prestige version called the Skyhawk. Price of the standard 172 is $9,795 and the Skyhawk is priced at $11,475 — it features factory-installed equipment formerly available only as optional — the Skyhawk's standard equipment includes electric push button starter, engine-driven vacuum system with horizon and directional gyros, wheel pants (speed fairings), wing strut fairings, landing and taxi light, sun visors, tow bar, navigation light flasher, turn and bank indicator, rate of climb, sensitive altimeter, clock and outside air temperature gauge.

The 172 features a new fuselage, outside baggage door, increased range, restyled landing gear of lower design and all-new interior and exterior styling. Landing gear has been shortened 3 inches for improved ground handling, 4.5 lbs. less weight and easier cabin access with a lower step. Both 172 and Skyhawk are powered with a 145-hp. Continental but the Skyhawk's is the O-300-D, which features crankcase modification to provide for an electric push button starter and

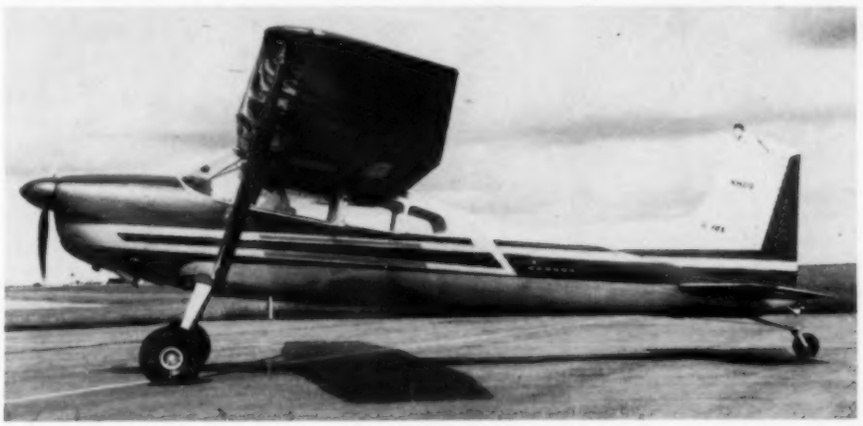
1961 Cessna Model 185

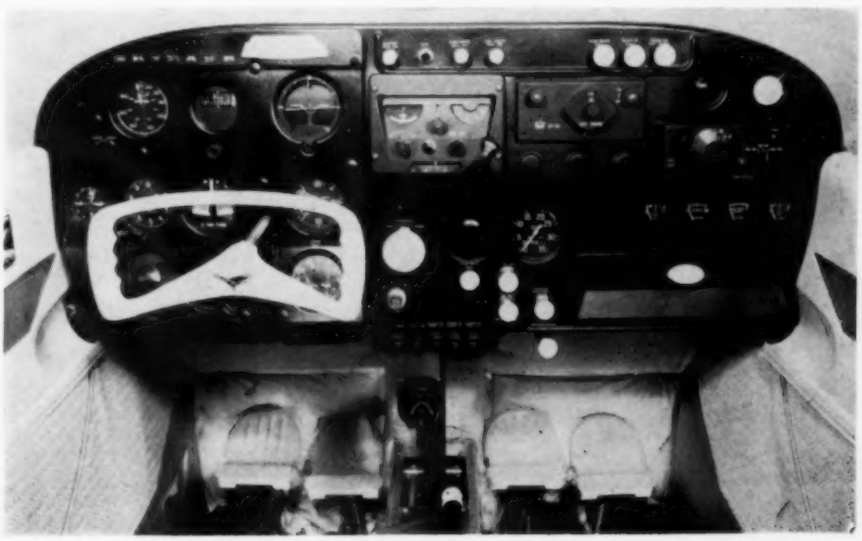
Factory Data

Price	$18,950
No. Seats	4-6
Engine: Cont. IO-470-F, 260 hp. @ 2,625 rpm.	
Gross Wt., lbs.	3,200
Empty Wt., lbs.	1,520
Useful Load, lbs.	1,680
Useful Pct. of Gr. Wt., %	52.5
Fuel Cap., gals.	65
Optional Fuel Cap., gals.	84
Oil Cap., qts.	12
Top Spd., mph.	176
Cr. Spd., 70% hp. @ 8,000 ft., mph.	165
Cr. Range, 60 gals., mi.-hrs.	770-4.7
Max. Range, 60 gals., mi-hrs.	885-6.8
Cr. Range, 81 gals., mi.-hrs.	1,005-6.1
Max. Range, 81 gals., mi.-hrs.	1,160-8.9
Rate of Climb, fpm.	1,000
Service Clng., ft.	17,300
Take-off Run, ft.	950
Take-off Dist. to 50 ft., ft.	1,510
Landing Roll, ft.	470
Landing Dist. from 50 ft., ft.	1,265
Wing Area, sq. ft.	174
Wing Loading, lbs. sq. ft.	18.4
Power Loading, lbs. hp.	12.3
Span, ft.	36
Length, ft.-ins.	26-2
Height, ft.-ins.	7-6.5
Baggage Cap., lbs.	120

NOTE: Performance is for gross weight at sea level unless noted.

New for 1961 is the Cessna Model 185 Skywagon, a heavy-duty workplane development from the Model 180. With fuel-injected 260-hp. engine, the $18,950 Model 185 cruises 164 mph. carrying full fuel, 6 adults and 270 lbs. of baggage. It is available on floats or skis. —(Cessna Photos.)





Instrument panel in new Skyhawk version of Model 172 groups flight instruments at left on shock-mounted panel. Across top, left to right, are master switch, generator light, switches for landing and navigation lights, parking brake control, cabin heat and cabin air. Starter push button is at lower left. At bottom center are throttle, cutout for manifold pressure gauge, tachometer, key ignition switch, carburetor heat control, cigar lighter, primer, mixture control and strainer drain control, with fuse panel at bottom. —(Cessna Photo.)

vacuum pump drive. Power, weight and performance are the same as for last year's 172A.

Due to the lower profile, the engine has been raised 3 inches to retain the original ground clearance for the propeller, and the engine cowling has been redesigned to compliment the longer, lower look. Cessna's new "blend temp" cabin heating and ventilating system is standard on both the Skyhawk and the 172 — it has 7 outlets for uniform ventilation and heated air distribution throughout the cabin.

A new instrument panel has all flight and navigation instruments in a shock-mounted panel on the left with engine instruments and fuel gauges on the right and engine controls at lower center. New interiors include choice of tan or blue for seats and sidewalls with headliner, seat and sidewall trim in beige vinyl, while bolsters and sidewalls are fawn and carpeting is beige. Six exterior color combinations include gray and ivory, red and ivory, brown and yellow, gray and yellow, dark green and light green and beige and brown. Skyhawk exteriors feature over-all paint in gray over ivory, red over ivory, light green and ivory, gray and yellow, blue over beige and beige and brown.

Over 992 Model 172's were produced during the 1960 model year and some 4,800 Model 172's have been produced since the model was introduced in late 1955. Both the 1961 Model 172 and the Skyhawk are available on floats.

New on the Model 172 and Skyhawk is this outside baggage door for easier handling of luggage behind rear seat.
—(Cessna Photo.)

Two-Place Model 150

Several significant refinements feature the new 2-place, 100-hp. Model 150 for 1961 in three versions — the standard at $7,495, the trainer at $8,400 and the Commuter at $8,995. Cessna has sold 1,000 of the 2-placers since introducing the 150 two years ago.

The new 150 has a relocated main landing gear, increased visibility, optional individual seats and restyled interiors and exteriors. Its exterior appearance is altered by relocating the main landing gear 2 inches aft of its location on previous models. This is said to shift the center of gravity forward for greater versatility in loading and ground handling.

The 150 has a new instrument panel with flight and navigation instruments on the left, engine instruments and gauges at right and cabin heater control, electrical and ignition master switches on the top edge of the panel with remaining switches in a vertical row at the right of the two centerline radio positions. Fuses are located below the glove compartment on the lower right, with the fuse value imprinted on each fuse retainer cap to facilitate replacement and allow fuse value changes when optional equipment is installed. The entire instrument panel can be flooded with rheostat-controlled red light from an overhead light console for night operation.

A new "comfort fitted" control wheel is used, molded from acrylic plastic. A new magnetic fuel level indicator responds instantly to fuel level changes.

Rear windows have been redesigned for greater visibility — glass area is

(Continued on page 67)

Here's new instrument panel for twin-engine Model 310F. Note how anti-glare shield has been extended around the panel.
—(Cessna Photo.)

Resembling a compact Tri-Pacer, here's first photo of the new Piper Colt. It has 108-hp. Lycoming engine, seats 2 side by side, cruises 115 mph. at 7,000 ft. on 6 gals. of gas hourly, and is priced at $4,995 for the standard version, $5,995 for the Custom, including Narco Superhomer and $6,995 for the Super Custom including Superhomer, AutoNav radio compass and gyro instruments.
—(Piper Photo by Wally Skiscim.)

New Piper Colt For $4,995

IN answer to a growing demand for a new airplane at lowest possible cost, Piper Aircraft Corporation came out this month with the lowest priced of all new airplanes — a 2-place Piper Colt selling at $4,995.

"We're very pleased to be able to offer once again a low-priced airplane and confidently believe the Colt will meet very wide acceptance," W. T. Piper told his dealers when he announced the Colt at his firm's annual sales meeting on Nov. 1. "We haven't meant to slight the little fellow and we know how much the Cub meant in getting hundreds of thousands of people in the air. In recent years, we have had to concentrate our engineering and development work on building larger, faster airplanes for corporation use such as the twin-engine Aztec and Apache and the high-performance Comanche."

Mr. Piper's Colt, which he considers easier for the novice to fly than the Cub, is a "compact" or baby Tri-Pacer, which it resembles. It has tricycle gear, 108 hp. Lycoming engine, side-by-side seating, is of fabric-covered tubular steel construction, will cruise 115 mph. on 6 gals. of gas per hour, stalls at 54 mph. and climbs 610 fpm. Standard fuel capacity is 18 gals. and 36-gal. capacity is available, with range of 324 to 690 miles.

(Continued on page 66)

Piper Colt 108

Factory Data

Price	**$4,995**
Engine, hp.-rpm.—	**Lyc. O-235-C1B-108-2,600**
No. Seats	**2**
Gross Wt., lbs.	**1,650**
Empty Wt., lbs.	**940**
Useful Load, lbs.	**710**
Fuel Cap., gals.	**18**
Opt. Fuel Cap., gals.	**36**
Top Speed, mph.	**120**
Cr. Spd., 75% hp. @ 7,000 ft., mph.	**115**
Stall Speed, mph.	**54**
Fuel Consumption, 75% hp., gph.	**6**

Cruising Range—

Gals.	Alt., ft.	Mph.	Mi.	Hrs.
18	SL	108	324	3
36	7,000	115	690	6

Rate of Climb, fpm.	**610**
Service Ceiling, ft.	**12,000**
Take-off Run, ft.	**950**
Take-off Dist. to 50 ft., ft.	**1,500**
Landing Roll, ft.	**500**
Landing Dist. from 50 ft., ft.	**1,250**
Baggage Cap., lbs.	**100**
Wing Area, sq. ft.	**147**
Wing Loading, lbs. sq. ft.	**11.2**
Power Loading, lbs. hp.	**15.3**
Span, ft.	**30**
Length, ft.	**20**
Height, ft.	**6.25**

NOTE: Performance is for gross weight at sea level unless noted.

Speed fairings (wheel pants) shown on Colt are extra-cost accessories.

National Pilots Association members brought the wives along to their annual outing and meeting, as noted in the banquet scene above. At right, Leighton Collins of Air Facts Magazine is shown presenting NPA Pilot of the Year award to Mrs. Aileen Saunders, El Cajon, California, who won last two All Woman Transcontinental Air Races.

Compass Course For National Pilots Association

THE National Pilots Association, now in its fifth year, found a sensible compass course for the future during the annual meeting held last month at Western Hills Lodge, Wagoner, Oklahoma.

Not only was it the largest meeting in the five-year history of the non-profit pilots' organization — it hit something of a new high in membership participation in wide open forum discussions of matters affecting all pilots nationally. Sparked by vociferous denunciations and just as vociferous defense of certain Federal Aviation Agency actions and powers under the Federal Aviation Act of 1958, the membership finally voted for the association to pursue a moderate course, with a substantial majority resisting various resolutions calling for amendments to the 1958 Act that would divest the FAA of its power as judge and jury.

The membership recommended to the NPA board of directors that the organization ask Congress to review the Federal Aviation Act to determine whether the public interest requires that the judicial function of the Administrator involving alleged violations should be placed in another agency and whether the procedure for public hearings with respect to proposed regulations issued by the Administrator under the act is adequate.

Other membership recommendations called for greater emphasis on "grass roots" aviation development, specifically in the sponsorship of more small landing fields for general aviation use and the encouragement of "uncomplicated" flight facilities for VFR, non-professional pilots. The board was also asked by the membership to present a "George Brewster Memorial" award annually to the person or organization making the most significant contribution in the field of meteorology or weather reporting services. Brewster disappeared in the wilds of Alaska on an official weather flight with other U. S. Weather Bureau personnel several months ago and has not been found. During one of the sessions a proposal was made that a Piper J-3 Cub be acquired and offered to the Smithsonian Institution. Hoyt

Valuable pointers for pilots were outlined by Shelby Kritser of Amarillo (left) on omni navigation, by UAL Meteorology Instructor Howard Hoffman (above) on mountain wave air turbulence, and by TWA Captain-Author Bob Buck (right) on weather and traffic control.

Dr. William Requarth, Decatur, Illinois, who flies to Chicago weekly to perform surgery, was elected NPA's new president.

Army aviation's close kinship to general aviation was discussed by Brig. Gen. Clifton F. Von Kann, director of Army Aviation.

Walkup of Stillwater, Oklahoma, immediately offered such a "collector's item" owned by Oklahoma State University for the purpose.

A brilliant array of speakers included Hon. Mike Monroney, U. S. Senator of Oklahoma and author of the Federal Aviation Act of 1958. Reviewing the history of federal aviation legislation and the reasons for centralizing power and authority into one agency, Monroney defended the present Act that places aviation under one agency in order to get away from the hodge-podge control which existed before. "We had to centralize the authority in one man, the rule-making authority in one body in order to stop the buck passing between several agencies and from loose committee action that stymied aviation development," he stated.

He admitted freely that the Act should be changed, and must be changed as events, times and developments require. He also said that there needed to be a revision of procedures in rule making and hearings on violations. "The Administrator should be the court of last resort instead of the motivating power in rule making. All interested parties should be heard and if there are those who are dissatisfied, they should have the right of appeal to the Administrator."

The Senator took a dim view generally of all the criticism directed against the Act and the present Administrator, stating that more heat than light had been generated and that a return to the old system of divided control would be little short of catastrophic. But he did defend the right of review and appeal and believes that the present framework can adequately handle such matters to avoid persecution.

The group also heard a timely address by Brig. Gen. Clifton Von Kann, Director of Army Aviation, who outlined the missions and described the accelerated development of U. S. Army aviation. The General emphasized the community of interests between general aviation and Army aviation in utilizing the same airspace and similar equipment and especially in research for advances in the line of simplicity, reliability and efficiency. "We believe," he stated, "that our sharing the same airspace with the same sort of equipment should promote common bonds of friendship and strength. You can offer tremendous assistance to your Army cousins by helping to dispel the distorted picture of 'another Air Corps' and by placing Army aviation in its proper focus — a vital tool for the support of the combat soldier."

The "working" sessions of the annual meeting concentrated on pilot proficiency and the up-grading of all pilots through education. As a result of the successful "skull sessions" held at the Oklahoma resort, NPA hopes to expand its services to all pilots in 1961 with flight safety seminars patterned after the convention program. The first such seminar or "clinic" on a local basis was held at Dallas' Addison Airport October 29. Instructions on how to plan such a one-day meeting of local pilots will soon be available from NPA headquarters in Washington.

(Continued on page 56)

Manufacturer W. T. Piper sought and obtained all-out NPA support for nationwide program of encouraging large numbers of low-cost airstrips.

Senator Mike Monroney discussed problems under Federal Aviation Act of 1958, which he authored, and called for steps to avoid persecution of pilots by regulation.

New main landing gear snaps up in retraction before nose gear as seen in this take-off portrait of the new 680F.
—(FLIGHT MAGAZINE Photo.)

Super Twin -- The New 680F

By TOM ASHLEY

AERO Commander owners familiar with the high performance of earlier 680 models are finding the new Model 680F a significant achievement in perfecting this popular light twin as an outstanding business transport. First deliveries began last month and the new F model is now proving itself by flying heavier loads faster and farther.

First light twin to invade the high-speed realm dominated for so long by larger, far more powerful and costlier high-performance airliners, such as the Convair, the 680F elevates the business flier into the 240-mph. category. This establishes the light twin on the topmost performance plateau yet reached, about 30% faster than the original Aero Commanders, which pioneered the small twins as a phenomenon only 10 years ago with unprecedented engine-out capabilities (no other twin-engine airplane of any size or power had ever been capable of one-engine-out take-off from a standing start until the prototype Aero Commander accomplished this feat for the first time in aviation history). From there the Aero Commander went on to cruise speeds which left behind the venerable DC-3 airliner and other classic radial-engine designs, and President Eisenhower's personal use of a Commander stimulated worldwide acceptance of its distinctive high-wing design with step-in cabin entry eliminating wing-climbing for passengers.

The impact of just how far the 680F has advanced becomes apparent in experiencing its rapid take-off acceleration and short-field performance; its better than 1,450-fpm. rate including over 307-fpm. SE climb rate at sea level and 16,000-ft. SE service ceiling; its power-speed range of from 200 mph. at 45% of power to more than 240 mph. at 70% of power, both of these at 10,000 ft. with cruising at higher levels giving performance exceeding those figures; its long-range capabilities up to 1,600 miles in less than 8 hrs. and its hefty useful load of more than 1.5 tons.

All this performance is delivered with 6-cylinder fuel-injected, supercharged engines rated at 380 hp. from sea level at 47 ins. of manifold pressure and 3,400 rpm. all the way up to 12,000 ft. at 43.5 ins. and 3,400 rpm. Maximum continuous power is rated at 360 hp. from sea level at 45 ins. and 3,200 rpm. up to 11,500 ft. at 40.5 ins. and 3,200 rpm.

These are the new Lycoming IGSO-540-B1A engines, with a bore of 5.125 ins., stroke of 4.375 ins, displacement of 541.5 cu. ins., and compression ratio of 7.3 to 1. They represent several years of continuous refinement and improvements developed from the 320-340-hp. GSO-480 Lycomings and feature fuel injection to eliminate the carburetor and its disadvantages and provide greater efficiency, smoothness, reliability and more precise control of mixtures and temperatures.

With the increased power from the new Lycomings, the 680F combines a higher gross weight of 8,000 lbs., of which 40% or 3,200 lbs. is available as useful load — the greatest load-carrying ability yet achieved by any light twin. Because the average 680F trip will seldom be operated at full gross weight, its performance will usually exceed factory claims, which are based on gross weight.

Such was the case with our introduction to the 680F last month at Santa Monica, California, where the first 680F was delivered to the West Coast Aero Commander distributor, Santa Monica Aviation, Inc. On the delivery flight from the factory at Oklahoma City, this 680F flew the 1,204-mile trip nonstop in 5 hrs. 23 mins., averaging 222 mph. with a wind factor of minus 10 mph. The trip was flown at 10,500 ft. on less than 60% of power and fuel con-

Aero Commander 680F

Factory Data

Engines: 2 fuel-injected, supercharged IGSO-540-B1A Lycomings rated 380 hp. each for take-off and 350 hp. each METO

Price	**$113,500**
No. Seats	**5-7**
Gross Wt., lbs.	**8,000**
Empty Wt., lbs.	**4,800**
Useful Load, lbs.	**3,200**
Useful Pct. of Gr. Wt., %	**40**
Std. Fuel Cap., gals.	**223**
Oil Cap., gals.	**10**
Top Speed, mph.	**290**
Cr. Spd., 70% hp. @ 10,000 ft., mph.	**244**

Cr. Range—

Alt., Ft.	Mph.	Miles
12,000	202	1,600
12,000	242	1,053

Stall Spd., gear, flaps down, mph.	**77**
Minimum SE Control Spd., mph.	**90**
Rate of Climb, fpm.	**1,466**
SE Rate of Climb, fpm.	**307**
Service Ceiling, ft.	**28,500**
SE Svc. Ceiling, ft.	**16,100**
Take-off Dist. to 50 ft., ft.	**1,729**
Landing Dist. from 50 ft., ft.	**1,608**
Wing Area, sq. ft.	**255**
Wing Loading, lbs. sq. ft.	**31.37**
Power Loading, lbs. hp.	**11.11**
Span, ft.-ins.	**49-6**
Length, ft.-ins.	**35-1¼**
Height, ft.-ins.	**14-6**
Tread, ft.-ins.	**12-11**

Cabin Dimensions, ins.—

Length	Width	Height
127.5	52	53

Cabin Volume, cu. ft.	**177**
Bag. Compt. Volume, cu. ft.	**32**

NOTE: All performance is for gross weight at sea level unless noted.

Flight view shows clean lines of new 680F and its thin nacelles with exhaust outlets on top. —(Aero Commander Photo.)

sumed totaled 203 gals. for an average of 37.5 gals. per hour.

Duke Effinger of Santa Monica Aviation, who has sold more Aero Commanders than any salesman in the business and whose flight proficiency school develops his customers' piloting technique to a fine point, showed us some of the new F's capabilities. Acceleration is so rapid for take-off that a maximum-performance take-off at sea level can be made within 400 ft. but it takes only a couple hundred feet more to lift off at the 680F's minimum single-engine control speed of 90 mph. Using what would be a fast climb speed for other twins, about 160 mph., the 680F climbed out at 1,500 fpm. so that 180 mph. is a better climb-out speed, at which the F tops better than 1,000 feet per minute while leaving plenty of miles behind in the process. We went through the 10,000-ft. level still climbing better than 1,200 fpm. while indicating 180.

For cruise efficiency, Effinger has found 2,500 rpm. most efficient and with 31.2 ins. of manifold pressure at

(Continued on page 38)

With Duke Effinger of Santa Monica Aviation, we landed at Palm Desert Airpark at Palm Springs in the new 680F for this portrait by the resort's dining room. —(FLIGHT MAGAZINE Photo.)

AERO COMMANDER

680F

THE ALL-NEW PERFORMANCE CHAMPION OF BUSINESS AIRCRAFT

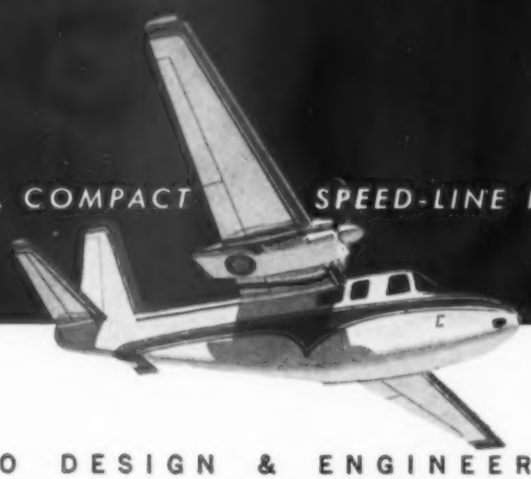
TOP SPEED 290 mph

CEILING 28,500 ft

GROSS WEIGHT 8,000 lbs

USEFUL LOAD 3,200 lbs

RANGE 1,400 miles



NEW, COMPACT SPEED-LINE NACELLE

AERO COMMANDER

AERO DESIGN & ENGINEERING CO • BETHANY, OKLAHOMA

COMPARE THESE PRELIMINARY PERFORMANCE DATA WITH ANY OTHER BUSINESS AIRCRAFT IN ITS FIELD!

The Aero Commander 680F sets new standards of brilliant performance! The efficient streamlining of the compact, new SPEED-LINE design combines with supercharged power to deliver top speed of 290 mph. *Cruising speed,* 244 mph!

NEW FUEL INJECTION

New supercharged Lycoming IGSO-540 fuel injection engines develop 360 hp at 3,200 rpm at sea level! Initial rate of climb at sea level is 1,660 fpm! Yet at 55 per cent power, normal fuel, the 680F will span 1,400 miles with 30 minutes' reserve!

SINGLE ENGINE CEILING

Here is *high flying!* Service ceiling, 2 engines, is 28,500 feet. The *single engine service ceiling is 16,100 feet!* Yet the 680F is an 8,000 lb aircraft with *3,200 lbs of useful load!*

NEW LUXURY, TOO

New sound insulation and above-the-wing exhaust maintain WHISPER-QUIET within the elegant cabin. Foam-filled, reclining chairs and the colorful interior feature rich fabrics and genuine leather: *flying comfort unsurpassed!*

CALL OR WRITE FOR COMPLETE DETAILS OR VISIT YOUR NEAREST DISTRIBUTOR TODAY!

No Cancellation in 2 Years

Mining Company Commander Flies 1,200 Miles Every Day

MANY business firms have found the modern private airplane to be indispensable — but none more so than a mining company in Peru. Its Aero Commander 680 flies 1,200 miles daily as methodically as clockwork, 26 days a month, year in and year out. In four years, this Aero Commander has been operated 6,300 hours to earn the distinction of flying farther than any other 680 in the world — over 1,260,000 miles. Last month the mining company took delivery of a new and improved Aero Commander, the 680F, which will fly bigger loads faster and farther.

"Our original 680's usefulness has been very impressive but our new 680F will provide 15-20% greater utilization because its increased performance makes it a more useful airplane," Jim Clark, chief pilot of Southern Peru Copper Corporation, Lima, Peru, told us. We interviewed him in California at Santa Monica Aviation, Inc., where he picked up his new Aero Commander.

Every working day of the year, Clark's Commander is taxied to the passenger terminal at Lima before 7 a. m. Its pilot, either Clark (who's from Denver) or Vic Grisanti (from Louisville, suh), files a flight plan and loads company passengers (usually 5 people) and company mail and cargo. The Commander takes off exactly at 7:20 a. m.

Three hours later, at 10:20 a. m., it lands 600 miles southeast of Lima at the coastal town of Ilo, where the pilot taxis the Commander into the company's hangar and drives his passengers and cargo 10 miles by station wagon into the company's settlement and to the hotel. Exchanging them for a northbound load, including sack lunches and Coca-Colas, he has the Commander back in the air promptly at 11:30 a. m. and returns to Lima for unloading on schedule at 2:30 p. m. Seven hours and 10 minutes have elapsed since he originated his trip in Lima and during this time the Aero Commander has spent 6 hours in the air, traveling 1,200 miles, and 1 hour 10 minutes on the ground at Ilo.

A precise schedule is maintained not only to meet the company's most efficient personnel work program but to enable the pilot to turn his airplane over to company maintenance men by 3 p. m. By 6-6:30 p. m., they complete servicing the Aero Commander for its work the next day. This is a maintenance-wise company, for it operates a wide variety of machinery in the mining business (from cars and trucks to giant shovels and even diesel-electric railway locomotives, as well as airplanes) and it knows each machine must receive proper maintenance. An airplane is no different — if the heavily-utilized Aero Commander is to go when the schedule says it must go, everything connected with its operation has got to be methodical.

"During the first two years of our operation, we flew the Commander 85 hours monthly while we were perfecting maintenance procedures for it, but once we were in the groove, we averaged 156 hours monthly utilization during the last two years," Clark said. "Our maintenance adheres strictly to FAA-approved airline methods. We use progressive, or phase, maintenance, backed up by an inventory of parts and two spare engines. This eliminates down-time losses due to periodics — instead of waiting to perform the customary 100-hour check, for example, our company mechanics perform everything it would call for before the 100-hr. period rolls around. Progressive maintenance also eliminates the need for top overhauls, too. When an engine overhaul is due, we have one of the spare power packages ready and the exchange is performed between Saturday at noon and Sunday mid-day, including flight test. Weekdays are for flying — all of our maintenance downtime is at night and on Sunday morning. Otherwise we could never achieve the utilization which the company needs."

The Commander's 340-hp. supercharged Lycoming GSO-480 engines are operated 1,000 hrs. between major overhauls. Platinum-pointed spark plugs are good for 300-400 hours.

(Continued on page 42)

Here are the Aero Commander's new thin-line airfoil engine nacelles in production at the modern new Aero Commander factory at Bethany, an Oklahoma City suburb. Main wheels rotate 90 degrees in retraction cycle to lie flat in circular wells.

—(Aero Commander Photo.)

New Electrol landing gears (above) and new Lycoming engines with topside exhaust systems (below) are pictured alongside the final assembly line at the Aero Commander factory.

SUPER TWIN

(Continued from page 35)

10,000 ft., with outside air temperature of 50 degs. F., the 680F was cruised out on about 65% of power to indicate 202 mph. for a true airspeed of 240 mph. Reducing power down below 55% with 27.3 ins. and the same 2,500 rpm., it indicated 190 and trued 225. One of the big bonuses of the IGSO-540 engine's greater power is that the 680F can deliver high cruise speeds at relatively low power settings for more efficiency and longer engine life. Engine wear results mostly from high crankshaft revolutions and the 680F's performance at 2,500 rpm. (a reduction of 700 rpm. from normal rated power engine speed) not only minimizes engine wear but gives the propeller a bigger bite for more work and makes for quieter, smoother cabin comfort.

These supercharged engines were still below their critical altitude at 10,000 ft., so we tried the 680F at 13,000 ft., with outside temperature remaining above 40 degs. F. in the California inversion. At 30.5 ins. and 2,500 rpm., it indicated 197 and trued 248 mph. Boosting the power on up to 32.5 ins. and 2,750 rpm., for about 70%, the 680F indicated 220 and trued 271 mph. This would not be considered an economical cruising operation but it does show what the airplane is capable of delivering in the way of speed should the need for it ever arise — as in the case of having to stay at 13,000 ft. against heavy head winds. More and more owners are utilizing efficient, modern oxygen systems in high-performance light twins to cruise at altitudes above 10,000 ft., especially on ferry flights and to obtain clearances in high-density traffic areas when lower levels are not available except with considerable delay.

With a 223-gal. fuel capacity, the 680F's power-speed flexibility provides impressive speed - distance - endurance capabilities, as follows:

Power	Mph.	Miles	Hours
		At 10,000 Feet	
45%	200	1595	7.94
50%	210	1412	6.65
55%	219	1239	5.59
60%	228	1114	4.82
65%	237	1051	4.34
		At 12,000 Feet	
45%	202	1600	7.82
50%	214	1422	6.55
55%	223	1249	5.51
60%	233	1127	4.75
65%	242	1053	4.27
		At 14,000 Feet	
45%	204	1590	7.71
50%	211	1388	6.46
55%	227	1258	5.43
60%	237	1137	4.69
65%	246	1061	4.21

This performance, with distance and endurance on an all-out basis without reserve, is based on extensive and detailed flight test data compiled for us by the Aero Commander flight engineering department. Power conditions shown are percentages of normal rated power, which is 360 hp. per engine. In actual brake horsepower and fuel flow, the equivalents per engine are as follows: 45% — 162 hp. and 12.4 gph.; 50% — 180 hp. and 14.8 gph.; 55% — 198 hp. and 17.6 gph.; 60% — 216 hp. and 20.4 gph., and 65% — 232 hp. and 22.7 gph. This shows that 2-engine fuel flow varies from about 25 gph. at 45% to about 45 gph. at 65% power, based on auto lean mixture in all cases.

Especially impressive with the 680F is the availability of power — changes of altitude come easy.

"Going from the old 680 to the new F model is like advancing from the DC-4 to the DC-6," Duke Ef-

Small frontal area of new nacelles is pictured in this view of a new 680F on the Brown Aero ramp in Dallas. Note 12-ft.-11-in. tread of main wheels.

—(FLIGHT MAGAZINE Photo.)

Speedy lines of new 680F are emphasized in this view photographed at Addison Airport in Dallas with a wide-angle lens. Low-to-ground Commander cabin has 127.5-in. interior length. Note ground clearance at prop tip.

—(FLIGHT MAGAZINE Photo.)

finger commented. "The F is the best flying Commander yet, a joy to fly and always zippy with reserve performance ready whenever it is desired."

Also to the airplane salesman's delight are the 680F's stability, straight forward stall and high single-engine performance. Lowering of flaps at approach speed does not pitch the nose at all. Manual stall speeds of 77 mph. with gear and flaps down and 87 mph. with gear and flaps up are for the power-off condition — power stalls with gear and flaps down are demonstrated with aileron control down at 58 mph. Its 16,000-ft. single-engine service ceiling is readily demonstrated — as is its high speed of 175-180 on one engine. While its twin-engine service ceiling at gross weight is listed at 28,500 ft., Miss Jerrie Cobb of the factory staff recently flew the new 680F at less than gross weight to a new altitude record of 37,010 feet for all aircraft in the 3,858-6,613-lb. category.

What it all adds up to is that the F model's performance makes it a more useful, more versatile and safer twin, as well as a more advanced or more

New Aero Commander instrument panel is pictured below before custom equipment is installed. Center panel groups engine instruments and gauges, with landing gear controls in small square frame. Just behind divider curtain in ceiling are fasten-seat-belt and no-smoking signs.

—(Aero Commander Photo.)

"sophisticated" twin. Ted Smith, Aero Commander vice president in charge of engineering and research development, says: "We have concentrated on making our new models safer and easier to fly while at the same time making them faster."

Smith's new engine nacelles have 40% less frontal area than those on former models, achieving a 10% drag reduction. The new thin nacelle has important other advantages. Its topside exhaust exit area for cooling is only half of that on the old nacelle's exhaust augmentor system. Smith says the 680E installation used 5 or 6 hp. for cooling but that the 680F system uses only 2 to 3 hp. for cooling. There is still another benefit — because the topside exhaust exit eliminates the old system's heating of engine induction air, the induction air remains cool and this eliminates the old system's built-in penalty of 3 or 4% power loss.

Electric cowl flaps atop the nacelle provide precise control of engine temperatures, whereas the old augmentor system had no variable outlet. Smith says additional augmentation is obtained because the topside exhaust exit is in a low pressure area. More obvious benefits include less exhaust noise and elimination of the old augmentor tubes' bark, both in the cabin and outside the airplane. In exiting the exhaust out the top, the engine was also raised about 4 inches and this created more prop-fuselage clearance for less prop noise in the cabin.

To obtain a thin nacelle and all of its benefits, Smith had to rotate the main wheels 90 degrees in their retraction so they would lie flat in the up position. A completely new landing gear design was engineered and produced for Aero Commander by Electrol. The new landing gear and its forged trusses allow for increased gross weights. Incidentally, many other new items are incorporated, including new forged aluminum engine mounts. So extensive were the advances that the factory changed some of its tooling and even went through new FAA certification on all four Aero Commander models while (1) incorporating power plant changes, (2) going to new landing gear, (3) increasing gross weights for more load-carrying capabilities, (4) incorporating a new hydraulic system and changing some of the electrical system and (5) achieving structural strengthening and higher performance. Maximum dive speed limit was raised from 300 to 320 mph., never exceed speed limit was raised from 270 to 288 mph., and yellow-line speed limit was raised from 210 to 230 mph., these being indicated air speed.

Drag reduction really paid off in performance, as demonstrated by the 680F. It is 12 to 15 mph. faster than the 680E, for example, when both airplanes are cruised on 415 hp. Using this identical power, the E model 680 is pulling 65% of power while the new F is pulling only 57% of its normal rated power. Without drag reduction, the 680F's speed increase would require 130 additional horsepower; the actual increase in normal rated power is 80 hp. The new model's speed increase is at 8,000-lb. gross, which is 500 lbs. heavier than that of the 680E.

Flexibility and versatility give the 680F its excellence and will go far in expanding its usefulness. Take loading, for example. We don't believe the average 680F will be operated at full gross weight more than 10% of the time — most of the time it will be flown at weights about 500-800 lbs. less than gross weight and this means the 680F will exceed its factory manual performance most of the time. For its 3,200-lb. useful load will seldom be carried, even for take-off.

Consider its loading possibilities. Full tanks and full oil capacity add up to about 1,538 lbs. This leaves 1,662 lbs. for equipment, people and baggage. Six people add up to 1,020 lbs., and this leaves 642 lbs. for equip-

Aero Commander 680F
reliably powered by Lycoming

A new twin-engine Aero Commander recently broke the world's altitude record for aircraft in its class, climbing to 37,010 feet. Power was supplied by two Lycoming IGSO-540 fuel injection engines, rated 380 hp each.

The smooth, powerful performance of the streamlined Lycoming engines lifted the new 680F to the new altitude record. These supercharged, six-cylinder, geared IGSO-540's are backed by Lycoming's fifty years of reliability in powered flight.

Lycoming now powers more types of executive and utility aircraft than any other manufacturer in the world.

Lycoming
Division — Avco Corporation
Stratford, Conn., Williamsport, Pa.

ment and baggage. Allowing 40 lbs. of baggage per person adds up to 240 lbs. and this leaves 402 lbs. for equipment. A high performance twin such as the 680F will usually carry complete nav-com equipment and some will even carry radar — it will take a very hefty package, indeed, to use the remaining 402 lbs. required to bring the weight up to full 8,000-lb. gross.

This flexibility — including the wide range of cruise power conditions available — will provide the light twin's most pressing need — to avoid overloading. It also means that a useful load of something like the 680F's 3,200 lbs. is in the neighborhood of the ideal capability for a light twin of high performance capabilities.

Standard equipment for the 680F includes the following:

FLIGHT INSTRUMENTS: Artificial horizon, directional gyro, turn and bank indicator, rate of climb indicator, airspeed indicator, sensitive altimeter, 8-day clock with elapsed time dial, magnetic compass and trim tab indicator.

ENGINE INSTRUMENTS: Dual-type tachometer, dual-type manifold pressure gauge, 2 engine gauge units (oil temp, oil pressure and fuel pressure), dual-type cylinder head temp, hydraulic pressure gauge, vacuum gauge, 2 volt-ammeters, 2 fuel quantity gauges and dual-type supercharger bearing temperature indicators.

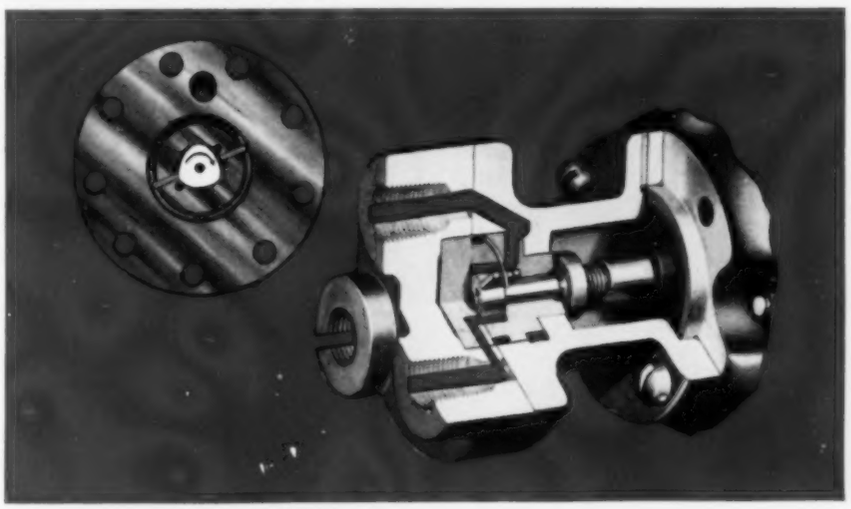
POWER PLANT: IGSO-540-B1A engines with 3-blade constant-speed, full-feathering, 93-in. all-metal Hartzell propellers, electric cowl flaps, dual high speed 100-amp generators, 35-amp/hr Exide battery, 2 auxiliary electric fuel pumps, dual vacuum system, dual engine-driven hydraulic pumps, electric firewall shut-off valves, long-range simplified 223-gal. fuel system.

CABIN AND MISCELLANEOUS: 5-place seating, choice of 4 leather-trimmed interiors, carpet, pilot curtains, window curtains, power brakes (3-spot disc), power nosewheel steering, electric hydraulic pump and emergency brake system, outside air temp gauge, flap position indicator, landing gear position indicator, stall warning indicator, vacuum warning lights, no smoking and fasten seat belt signs, Grimes eyebrow instrument lights plus auxiliary instrument lighting system, position lights, rotating beacon, 2 landing lights, individual reading lights and air vents for each seat, 25,000-BTU Janitrol heater with thermostatic control, ground blower ventilating system, Scott oxygen system, external power plug, control lock, emergency exit, fresh air port cabin ventilating system, heavy duty

YESTERDAY'S PIONEER . . . TODAY'S LEADER

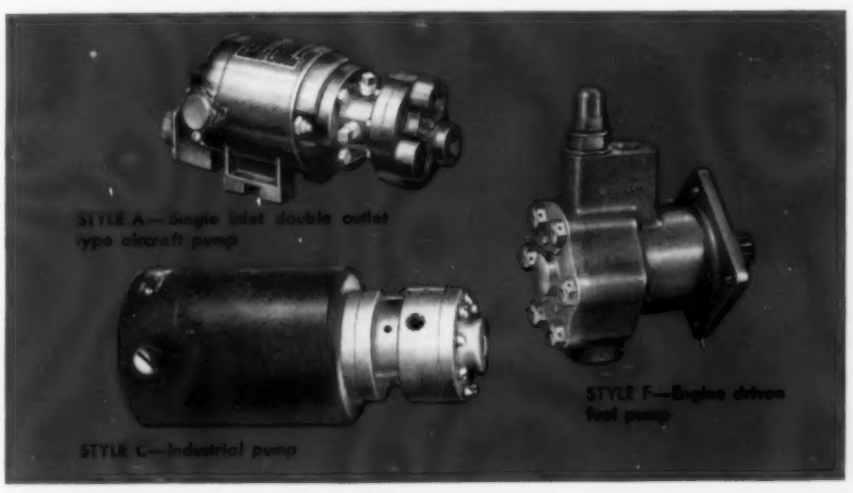
WELDON / FLUID METERING PUMPS

Positive Displacement Rotor Type. For Industrial Applications, Aircraft Anti-Icing and Aircraft Fuel.



IT'S SO SIMPLE!

The rotation of the rotor draws the fluid in through two passages, filling the cavities formed by the three lobes of the rotor. This fluid is sealed within these small cavities until it is forced through the two outlet holes by the floating blades. The flow may be kept uniformly divided through two outlet ports, or may be combined internally for passage through a single port.



COMPACT • LIGHT WEIGHT

Send for Weldon Manual and Catalog with detailed specifications and installation drawings, covering the full range of Weldon pumps in various capacities. Specify your requirements.

OVER 40 YEARS OF LEADERSHIP SINCE 1918

THE WELDON TOOL COMPANY

3000 WOODHILL ROAD . . . CLEVELAND 4, OHIO

8-ply nylon tires and choice of 5 paint designs.

About 1,000 Aero Commanders have been delivered and 360 of them have been 680's. The 680F we were in with Duke Effinger was Serial No. 928. His firm has been assigned Commander No. 1,000 and it will be the 100th Commander sold by Santa Monica Aviation in its 4½ years of operation. Last year this distributor sold 24 Commanders. It will deliver 28 of them this year.

Domestic and export Aero Commander distributors as of late October were listed as follows:

Aero-Air, Inc., Hillsboro, Oregon; Air Carrier Supply Corp., Newark Airport and New York City; Big Brother Aircraft, Inc., Nashville and Atlanta; Brown Aero Corp., Dallas; Buffalo Aeronautical Corp., Buffalo; Downtown Airpark, Inc., Oklahoma City; Holladay-Aero, Inc., Arlington, Va.; Indianapolis Executive Aircraft Corp., Indianapolis; Mark Aero, Inc., St. Louis; Midland Aero Corp., Midland, Texas; Minnesota Airmotive, Minneapolis; National Aero Sales Corp., Midway Airport, Chicago; Newport Air Park, Newport, Rhode Island; North Atlantic Airways, Inc., Beverly, Mass.; Planes, Inc., Houston; Reading Aviation Service, Reading, Pa.; Robbins Aviation Corp., Pontiac, Mich.; Santa Monica Aviation, Inc., Santa Monica; L. B. Smith Aircraft Corp., Miami; Southwest Airmotive Corp., Charlotte; Southern Ohio Aviation Sales, West Carrollton, Ohio; Trans-Air Corp., New Orleans; Vest Aircraft, Denver; Aero Sales Co. Ltd., Honolulu.

Aero Sales (PTY) Ltd., Pretoria, S. Africa; Aerotransportes Wollkopf, Buenos Aires; Aircar do Brasil, Rio de Janeiro; Air Carrier Service Corp., Washington, D. C.; Air Taxi Co., Tehran, Iran; Commander Aviation, Ltd., Toronto, Canada; D. D. Thomson Aviation, Ltd., Montreal, Canada; Danfoss Aviation, Copenhagen; Fenwick Aviation, Paris; Forrer-Fenwick, S. A., Zurich; Field Aircraft Services, Ltd., London; Motorflug, Koblenz, W. Germany; L. B. Smith Aircraft Corp., Miami; Trans-Air International, New Orleans; Salfa, S. A., Santiago, Chile; and Vest Aircraft de Mexico, Mexico City.

At the factory in Oklahoma City, the Aero Commander sales staff is headed by Gene Charles, director of sales, and includes Phil VanMeter, manager of sales finance; Don Stirling, sales coordinator; Paul Blanton, 500A and 560F sales manager; Bill Wallace, 500B sales manager; Emmett Morris, 680F sales manager and Clarence Morgan, sales training manager. The factory marketing department includes Tom Sim, director of marketing; Jack Rector, public relations manager; Miss Jerrie Cobb, advertising and sales promotion manager, and Eddie Corbin, military relations manager.

Pilot of world's busiest Aero Commander is Jim Clark, pictured above, looking at his new 680F's insignia. Clark hasn't cancelled a daily Aero Commander trip in the last two years. His Commander has averaged 156 hrs. of flying monthly during that period, with 1,000 hours between engine overhauls. He averaged 200 mph. trip speed in the 680, expects 230 mph. in the 680F.

—(FLIGHT MAGAZINE Photo.)

BUSIEST COMMANDER

(Continued from page 37)

Carburetors go 1.5 to 2 engine overhauls before they are overhauled; before they develop difficulties, Bendix flow meters indicate minor discrepancies first. Both left and right magnetos are usually exchanged between engine overhauls. Valve or jug changes are infrequent.

Regarding the latter, Clark says dust is a recognized problem in Peru — air filters are changed every night. A stock of filters is maintained so that those which are removed can be thoroughly cleaned and soaked before going back into service. Engine oil is changed weekly.

"In four years of operating the 680, only 5 trips were cancelled because of unplanned maintenance and these occurred during the first two years before we had perfected progressive maintenance," Clark said. "During the last two years, we have not cancelled a single trip for any reason, maintenance or weather."

Such dependability is impressive in the light of the Aero Commander's heavy utilization schedule of 1,200 miles daily, 26 days per month. This adds up to 156 hrs. monthly. Operations are in IFR weather during six months of the year. Clark uses airline weather minimums — 200 ft. and half a mile. He hasn't cancelled yet.

Clark operates his Lycomings at 55% of rated power for cruising to minimize maintenance requirements. This gives him a good 200-mph. trip speed and has pegged engine overhaul periods to the 1,000-hr. mark. "Complete reliability is what counts," Clark says. "We could never complete 1,200 miles daily on a year-round basis without completely-dependable maintenance standards."

While 6,300 hrs. is a lot of flying time to log in four years, Clark's Commander could continue that record for four more years of trouble-free operations. So why replace it with a new airplane? "Because the new 680F is a better airplane, capable of more usefulness," Clark explains.

This makes the new Commander more than a mere replacement — it represents a step-up or advancement. It will carry greater payloads at higher speeds. This is the heart and kernel of aviation progress, both in aircraft usefulness and aircraft design and performance. It's the reason why manufacturers must continually upgrade airplanes and engines with new and improved models.

"Take speed alone," Clark explained. "Where we cruised our old 680 to make good a 200-mph. trip speed on 55% of power, we can cruise our new 680F at 60% of power to make good 230 mph. We can do this because the new IGSO-540 engines are more powerful and more efficient and the new airplane has less drag. Better engine cooling and the provision of electric cowl flaps for precise control of cylinder head temperatures will enable us to use 60% of power instead of 55% — without increasing engine wear or shortening overhaul periods.

It is interesting to note that Clark plans for a 15-20% speed increase, although the 680F is actually described by the manufacturer as being only about 10% faster than the older model. It goes to show that increased performance means different things to different people — it all depends on the use of the airplane. In Clark's case, increase in usefulness will work out this way:

By making each Lima-Ilo-Lima round trip at 230 mph. instead of 200 mph., the new Aero Commander will save about 19.5 hours each month. This means 4,680 additional miles in the same number of engine hours per month. Or, putting it another way, the 680F can make 191 trips of 1,200 miles each during a 1,000-hour engine overhaul period as contrasted to 166 trips in the old 680 — 25 extra trips per overhaul period or the equivalent of an extra month. It all adds up rapidly on a schedule as heavy as his — 189,000 extra miles of travel over and beyond that provided by the

OUR DESIGN HATS ARE OFF TO THE AERO COMMANDER'S RELIABILITY

Being designers of hydraulic landing gear equipment from the time business aircraft were still a novelty, we can appreciate the speed, beauty and economy that are built into the new Aero Commander 680 F.

But what we appreciate most is the reliability that has been designed into this sleek package. It's a demonstration of aero-dynamic design at its best.

And speaking of design ability, we're mighty proud of our role in the 680 F. We supplied the landing gear and the dependable supporting equipment including accumulator-regulator unit, locks, brake valves, steer cylinders and flap cylinders.

Because of the trim frame and thin, speed-line nacelle, the 680 F needed landing gear that would fit compactly in the nacelle and maintain the continuity of the wing bottom skin. What we're especially proud of is the unique design approach we used to solve this problem.

Our solution: a rotating gear system that fits flush within the nacelle and requires a minimum of space and hardware. Other advantages? The system is designed to fit either left or right hand nacelle, providing a standardization that lowers costs and simplifies maintenance. And there's built in, double safety reliability, too, with both a preloaded cylinder for emergency gear extension and locking bungees.

The Electrol landing gear, while retracting, rotates 90 degrees. Result: compact fit of the wheel in nacelle.

Proud indeed are we about this achievement, the latest example of Electrol's continuing ability to design the new and the unusual.

Electrol

INCORPORATED • KINGSTON, NEW YORK

DESIGNERS AND MANUFACTURERS OF LANDING GEAR AND SUPPORT EQUIPMENT, ACTUATORS, POWER CYLINDERS, ACCUMULATORS, SYSTEM VALVES, POWERPAKS AND HAND PUMPS.

old 680 during the same 6,300-hr. period of time.

In addition to the twin-engine Aero Commander, the company operates another airplane — a single-engine, 4-place Helio Courier. It is designed for short-field operations and is used to link the company's facilities and properties in the local vicinity of Ilo. These range from a 600-ft. airstrip adjoining the smelter on the coast to a dirt strip of about 2,000-ft. length at an elevation 15,000 ft. above sea level, near the mining operations. The company has 10 airstrips, most of them at or near the 8,000-ft. level.

Piloted by Dick Kaiser, the Courier averages about 85 hours of flying per month. It carries pilot and 3 passengers to most strips but is limited to pilot and 2 people with half fuel at the 15,000-ft.-high strip, where winds of 25 mph. or more prevail and only about half the length of the strip is needed on average days. Most of the mountain strips have uphill grades, with landings uphill and take-offs downhill. The Courier can be flown with full control down to about 40 mph. and has practically no ground roll when landed on an uphill grade. In addition to transporting personnel and supplies, the Courier is used to patrol the company railroad as it snakes up through the mountains and the company power lines.

Since it was placed in operation during 1957, the company's Helio Courier has logged 3,000 hours of specialized work operations.

"Our company has learned to depend on the private airplane for reliable performance," Clark says. "The company airplane can deliver supervisory personnel and cargo faster, more efficiently and safer than any other form of transportation. But the main point is that management can depend on its airplane."

All of which goes to prove that the modern business plane has earned its acceptance as a trustworthy business machine capable of performing valuable work day in and day out — or, to be more specific, 1,200 miles or more of daily transportation in the case of Southern Peru Copper Corporation's fast Aero Commander.—T.A.

George W. Kirkendall, Sr. (left, above), was first pilot to fly the original Cub airplane 30 years ago. He is shown with W. T. Piper and E-2 Cub N16P.

—(Piper Photo by Tony Linck.)

30 Years of Cubs

THE 30th anniversary of the original Cub airplane's first flight was celebrated recently at the Piper factory in Lock Haven with Luther Johnson of Greenville, S. C., flying his E-2 Cub, one of several E-2's known to be licensed and still flying today. C. G. Taylor built the first Cubs — his Taylor Aircraft was founded in 1928, reorganized in 1930 with W. T. Piper as treasurer and bought out by Piper in 1936. First Taylor Cub flight on Sept. 12, 1930, was with 20-hp. Brownbach Kitten engine. Production model was powered with 37-hp. single-ignition Continental A-40 engine, with E-2 certificated June 15, 1931. Johnson's E-2 with A-40 Continental carries 9 gals. of gas, cruises 50 mph. Over 30,000 Cubs have since been built, including the J-2 with closed cabin; the J-3 of 1938; the 40-hp. Cub Trainer which sold for only $995; the J-4 Coupe and the modern Super Cubs with 90 or 150-hp. engine.

Here's Luther Johnson of Greenville, S. C., flying his E-2 Cub as a new Piper Aztec climbs up beside him briefly.

—(Piper Photo by Tony Linck.)

***FLIGHT TO HAWAII** was made by Thomas H. Cooke, vice president of Aero Sales Co., Honolulu, in this new Model 500A Aero Commander, with E. A. Hickman as navigator. With ferry tanks boosting total fuel capacity to 366 gals., Cooke took off from Oakland at 7,190-lb. gross and flew 2,186 nautical miles at altitude of 5,000 ft., in 14 hrs. 32 mins., to average 172 mph., burning 20.3 gals. hourly with a 55% power setting of 21 ins. and 2,200 rpm.*

—(Aero Commander Photo.)

"Marvelous new Aircraft"

"Impressive Performance"

"Smooth flying comfort"

Such words of praise
are richly deserved
by the new model 680F

AERO COMMANDER

This pace setting
business twin is equipped with
seats manufactured by

FLIGHT LINE

to the exacting specifications
of the Aero Design and
Engineering Company

FLIGHT LINE CORP.

8326-30 San Fernando Road
Sun Valley, California

Here are part of the 354 private aircraft which brought nearly 800 visitors to Atlantic City for the Federal Aviation Agency's second annual fly-in at its big NAFEC experimental center. Twenty-three makes of aircraft were represented, including 37 twins. —(FAA Photo.)

Visiting airmen registered upon arrival at NAFEC and were conducted on escorted tours during which FAA research and development activities were shown and explained. During the hour preceding noon, 85 pilots registered. Jerseyites were hosts at a clambake closing the second annual fly-in. Some of the hungry lot are shown below waiting to eat. —(FAA Photos.)

354 Planes at FAA Fly-In

THE Federal Aviation Agency's second annual fly-in last month for general aviation aircraft and airmen at its Atlantic City National Aviation Facilities Experimental Center (NAFEC) attracted 354 planes bringing over 770 persons from most Eastern states. Thirty-seven of the visiting planes were twin-engine business aircraft. Visitors came from as far as St. Louis and Ontario, Canada. At the peak of incoming traffic 85 pilots registered in one hour. Twenty-three makes of planes were represented. Last year the inaugural fly-in drew 232 planes.

Exhibits and demonstrations of nearly a score of projects with direct value to the general aviation pilot were shown. Tours showed radar installations and the extensive new lighting systems under test on the 10,000-ft. runway. Visitors saw advanced electronics and computer devices designed to improve and speed up air traffic control and watched simulated problems under study by engineers and technicians.

Deputy FAA Administrator James T. Pyle emphasized the FAA's active interest in service to and the promotion of general aviation, saying FAA recognizes the size and scope of general aviation and is vitally interested

(Continued on page 53)

YOU ASKED FOR IT...HERE IT IS!

THE NARCO ADF-29 AUTOMATIC DIRECTION FINDER

With Revolutionary New Narcomatic Sensor...
Discards Old-Fashioned, Static-Prone, Null-Seeking System...
Operates on Strongest Signal...All-Transistorized...
Draws Only Half an AMP...Weighs Only 8 Pounds...Available NOW!

"Why not a Narco ADF?" For years that question has been asked by the tens of thousands of private and professional pilots and plane owners who have learned to respect and trust Narco Omni and VHF communications equipment. Narco's answer has always been "Not until a new and better design concept for ADF's can be found." Now, after years of steady research, that time has arrived. Narco has an ADF—the incomparable ADF-29—developed and designed by the same Narco people who made safe, reliable, accurate Omni available at practical cost for the vast majority of private pilots and plane owners.

"Just another ADF" was not good enough in the minds of Narco engineers and management—a group made up mostly of seasoned pilots fully aware of the navigation ease offered by a needle that pointed to and brought you to any radio range or homer, marine beacon or standard broadcast station.

Narco's ADF development project was started five years ago with these basic concepts and design goals:

1. **There must be a way to derive direction information from the strongest station signal, not the weakest. Present-day (pre-Narco) ADF's get their information from nothing—that is, home on the null or minimum signal, easily get distracted by extraneous signals such as static and, especially, thunderstorms.**
2. **There must be a way to eliminate the rotating, null-seeking or gonio loop, kept at right angles to the station by costly, delicate, on-off electro-mechanical systems.**
3. **There must be a simpler way to translate direction sensing information to needle indication in front of the pilot.**
4. **There must be a way to substantially reduce weight and electrical power loads, both becoming critical problems in modern, well-equipped business airplanes.**

Narco proudly reports that every one of these major goals has been achieved beyond the most optimistic expectations. The result? The Narco ADF-29—so totally different in concept, so improved in performance, so simplified for better reliability, so compact that all previous ADF designs and concepts are obsolete

NARCOMATIC SENSOR

Heart of Narco's electronic breakthrough is the patented Narcomatic Sensor, which protrudes only 2½ inches from the aircraft's skin, and complements the clean aerodynamic lines of today's fine business airplanes.

Inside there are no moving parts, just three fixed sensing units which compare signal information 100 times a second. Most important, the Narcomatic Sensor derives its information from the strongest, sharpest, most clearly defined signal of the station tuned—not the null. As a result, the ADF-29 is much less affected by thunderstorms, static or other extraneous signals.

COMPACT, PANEL-MOUNTED, ALL-TRANSISTORIZED

The entire ADF-29 combination receiver and tuning unit mounts simply and easily on the panel in an instrument cut-out measuring 6⅜ by 2⅞ inches. Even the direction needle is incorporated in the face plate, eliminating the need for a separate indicator instrument and finding the space for it in the panel. And the indicator has been designed with an oil-submerged, hermetically-sealed meter movement for faster action, constantly precise bearing indication.

Here are other features you'll like about the Narco ADF-29:

Weighs Only Eight Pounds—about half the weight of other ADF's.

Draws Half an AMP—about one-twelfth the power normally used.

Has Manual Volume Control (plus AVC).

Provides For Correction of quadrantal error.

Price complete $895

narco ADF-29

See your Narco distributor or write for ADF-29 brochure,
National Aeronautical Corporation, Fort Washington, Pennsylvania

HERE'S THE SIGN OF THE FINEST SERVICE FOR YOUR PIPER AIRPLANE

Piper has established a world-wide network of Factory-Certified Service Centers to assure you of the finest service possible for your Piper airplane.
To earn the coveted designation, service organizations must meet rigid requirements, must be properly equipped and staffed by personnel who have attended the intensive service school conducted at the Piper plant.
Dozens of Piper Factory-Certified Service Centers have been established throughout the nation and around the world, and more are being designated to assure convenient and competent Piper service wherever you may wish to fly.

FOR THE BEST IN PIPER SERVICE AND MAINTENANCE VISIT THE PIPER FACTORY-CERTIFIED SERVICE CENTERS LISTED BELOW

ANDERSON AVIATION CO., INC.
Sky Harbor Airport
P. O. Box 5175
BRidge 5-5741
Phoenix, Arizona

BROWNING AERIAL SERVICE
Municipal Airport
P. O. Box 1173
HOmestead 5-1728
Austin, Texas

CATLIN AVIATION CO.
Will Rogers Field
P. O. Box 2398
MUtual 5-6644
Oklahoma City, Oklahoma

CUMMINGS & GROVES AVIATION, INC.
Houston International Airport, Hangar No. 8
MIssion 4-5593 *and OLive* 4-4351
Houston, Texas

DELAWARE AVIATION CORPORATION
North Philadelphia Airport
HObart 4-1600, *TWX PH* 520
Philadelphia 36, Pennsylvania

EXECUTIVE AIRMOTIVE, INCORPORATED
Stewart Air Park
P. O. Box 70
GArfield 8-3581, *GArfield* 2-7277
Parkersburg, West Virginia

J & J AIRCRAFT, INC.
Sarasota-Bradenton Airport
821 *General Arnold Road*
ELgin 5-6868
Sarasota, Florida

KEN-MAR AIRPARK, INC.
Ken-Mar Airpark
Box 2667, *University Station*
MUrray 3-6589
Wichita, Kansas

RED AIRCRAFT SERVICE, INC.
Broward County International Airport, Building 78
JAckson 3-9624
Fort Lauderdale, Florida

ROSS AVIATION, INC.
Riverside Airport
HIckory 6-6654
Tulsa, Oklahoma

WEB THOMAS AIRCRAFT, INC.
Highland Park and Addison Airports
ADams 9-2687
Dallas, Texas

NEW PANEL. Full instrumentation right in front of the pilot, radios grouped conveniently near center, (room for complete 2½ system plus ADF), plenty of room for extra instruments, plus map compartment.

GO FAST! GO FIRST CLASS!

GO COMANCHE for '61

You'll be pleasantly surprised when you fly the new, more-beautiful-than-ever 1961 Piper Comanche—with either 180 or 250 Lycoming horsepower. You'll find new flight-ease and comfort features everywhere for you and your passengers. New panel, new toe brakes, new automatic flight, new radio navigation packages and systems, new cabin heating and cooling *plus* the wonderful, just-right handling characteristics which set the Comanche apart as a plane the pros really love to fly . . . a plane beginners feel at home in.

AND NOW! 1600 MILE RANGE FOR COMANCHE 250

With approved gross up 100 pounds to 2900 pounds, the 250 hp Comanche now has 90-gallon fuel capacity as standard in the Super Custom and Auto-Flite models—good for over 1600 miles at economy cruise. There's long range, too, with amazing economy in the 180 hp Comanche—over 1100 miles with 60-gallon capacity.

MORE THAN EVER YOUR GREATEST VALUE

With the biggest useful load . . . roomiest cabin . . . with superior aerodynamic efficiency *plus stamina* proven by 3 world non-stop distance records . . . the Comanche is easily and surely your best value in the high performance, single-engine field. See for yourself at your nearest Piper dealer's or write for 1961 Comanche brochure, Dept. 11-F.

OFFERED WITH THESE *Exclusive* **FLIGHT-EASE FEATURES**

PIPER AUTOCONTROL. Standard on AutoFlite Comanche. Holds any course precisely with heading lock, makes turns automatically, too. All-transistorized.

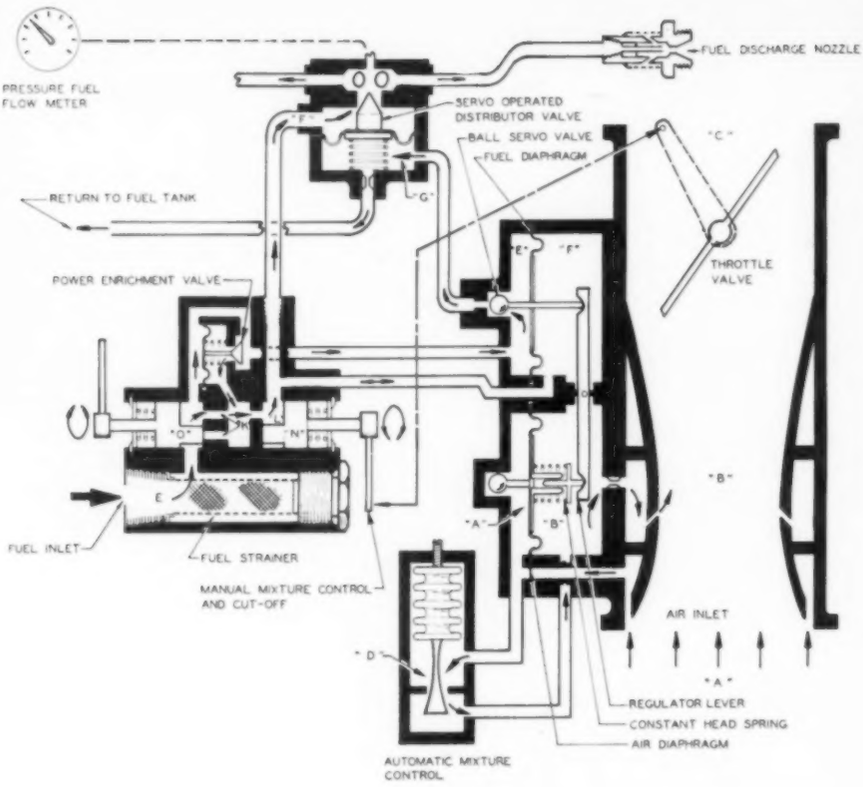
ALTIMATIC PILOT. Turns automatically to any pre-set heading; climbs to, descends to, then holds any pre-set altitude precisely. Ultimate in restful automatic flight. (Optional)

PIPER AUTO NAV. New Piper-perfected radio navaid provides LF and standard broadcast reception plus automatic homing at surprisingly low cost. (Optional)

PIPER *Comanche*

PIPER *AIRCRAFT CORPORATION • LOCK HAVEN, PA.*

ATTRACTIVE LEASE/FINANCE PLANS



Schematic sketch shows units separately for author's explanatory comments in the article below. However, the Bendix injection system is unitized, as shown in the photo above. It is in use on the Lycoming IO-540 engines which power the new Aero Commander 500B. The system can be used on 180-550-hp. engines, including the 450-hp. Pratt & Whitney R-985.

—(Bendix Photo and Sketch.)

Bendix Fuel Injection For 180-550-Hp. Engines

By D. D. HOLLOWAY

Engineering Manager of Propulsion Equipment (Aircraft), Bendix Products Division

THE Bendix Corporation, which has manufactured aircraft engine fuel control equipment for the past 30 years, is now delivering the RS-type port fuel injection systems to the Lycoming Division of AVCO Corporation for use on their IO-540 engine installed in the Aero Design Model 500B airplane. Additional model sizes are now in prototype and development stages for the Pratt & Whitney R-985 engine as well as other Lycoming engines.

Bendix has had this system under development for the past four years and after extensive engine and flight testing, is offering it to the engine manufacturers for all light aircraft engines in the 180 to 550-horsepower class. Applications for other than aircraft power plants have not been explored to date.

From the outset the development program at Bendix was predicated on a system embodying inherent simplicity and reliability, and which together with low cost would encompass the following technical requirements:

1. Continuous-flow port injection with the fuel distribution to all cylinders within 2% accuracy.
2. Manual leaning for in-flight trimming and clean engine cut-off.
3. Low air induction system losses.
4. Excellent load compensation at all speeds and altitudes.
5. Independent idle fuel flow adjustment.
6. Basic design adaptable to all light aircraft engine models without major modification to the engine.
7. Unit design must be adaptable to add an automatic mixture control, selective mixture control (best power and best economy at all powers and all altitudes) and automatic fuel enrichment.

Various designs, including engine driven controls, were investigated but were discarded due to either price, reliability or metering accuracy. The time proven principle of air flow measurement to the engine by means of a venturi system and using the air measurement forces to control fuel flow was adopted as the only positive solution to assuring correct fuel/air ratio to the engine for all power conditions and still keep the cost within reach of the small aircraft owner or operator.

Past experience on proven designs of servomechanisms used in Bendix jet fuel control systems, along with the vast experience gained on the Bendix Stromberg carburetors and associated direct injection systems through the last 30 years, was used in formulating the design of this injection system.

On this page is a schematic drawing of the final design for a completely automatic fuel control system. In some installations, where the automatic feature is not considered necessary (i.e. the pilot manually selects the mixture ration), the automatic mixture control unit "D" is omitted.

The following is a description of the operation of the automatic system. The letters referred to are those found on the schematic.

A measure of the airflow consumption of the engine is accomplished by sensing impact pressure and venturi throat pressure in the throttle body (Pressures A & B). These pressures are vented to the two sides of the air diaphragm. Chambers A & B are connected by an air channel in which the automatic mixture control unit is located. This unit is responsive to both changes in air temperature and pressure (density) and will keep the differential pressure between chambers A & B constant for any airflow, re-

gardless of changes in the air inlet density. A change in engine air consumption will change the velocity of the air in the venturi and will reflect in a change in the air differential pressure A & B. The air pressure "C" is the engine manifold pressure for naturally aspirated engines and supercharger inlet pressure on engine driven supercharged engines.

The servo regulator system consists of a fuel diaphragm which opposes the forces of the air diaphragm through a regulator lever which is pivoted between them. Both the air and fuel diaphragms are guided by spherical surface contacts to reduce drag on the movement of the diaphragm assemblies. The ball on the fuel diaphragm is located in the inlet (unmetered fuel pressure "E") fuel pressure chamber of the regulator and it also acts as a servo valve that controls the pressure "G" on the back side of the servo operated distributor valve. (This latter pressure is refered to as servo pressure or Px pressure since this is an integrating servo). The pressure on the opposite side of the fuel diaphragm is the pressure after the fuel has passed the fuel strainer, the manual mixture control rotary plate "O," the lean and rich fuel jets "K," the take-off jet "L" and the rotary idle plate "N," and is referred to as metered fuel pressure "F." Since three of the four pressures involved in the regulator (namely, impact air "A," venturi throat "B" and fuel inlet pressure "E") are fixed, the fourth pressure (metered fuel pressure "F") must vary to keep the regulator in balance. The servo pressure Px varies to accomplish this balance as it will increase the pressure "G" on the top side of the servo operated discharge nozzle to restrict flow from the nozzle until the pressure "F" below the diaphragm builds up to a point of regulator balance.

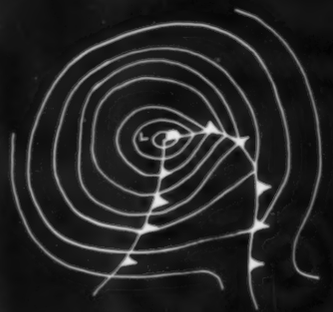
The pressure drop across the metering jets is proportional to the air forces generated in the venturi, since the air forces A-B balance the fuel forces in the regulator E-F. Since the air pressure differential varies as the square of the airflow, the fuel pressure differential varies in like manner. The fuel flow through an orifice (jet) varies as the square foot of the pressure drop across it, thus the correct fuel to air ratio mixture is maintained with this system, regardless of the quantity of air being consumed by the engine.

At low airflows (idle range) the fuel differential pressure is established by a constant head spring acting through the regulator lever to close the ball servo valve in the fuel side of the regulator. A reciprocating engine usually requires a richer mixture at idle than is required at cruise power. This is due to a number of engine characteristics . . . such as valve overlap where ambient air is drawn into the cylinder through the exhaust valve as well as the intake valve. The constant head spring acts to give a higher differential pressure across the contoured idle valve at these low airflows, thus giving a richer fuel/air mixture.

As the air differential pressure across the air diaphragm is increased, the spring collapses and the telescoping stem of the air diaphragm operates as a solid member. At powers above 65% to 75% when it is desirable to have a richer fuel to air mixture for cylinder cooling the power enrichment valve, operating off of differential pressure E-F, opens to permit fuel to by-pass the jets "K," thus furnishing the additional required fuel to the engine. This valve is contoured to give the correct fuel to air mixture at any airflow in the power range.

The servo discharge nozzle consists of a spring-loaded poppet type valve that is actuated by a diaphragm. As previously explained, this diaphragm action is controlled by the servo pressure Px from the regulator. The spring itself is employed to seat the discharge

positive protection against carburetor icing



Carburetor ice—a condition that every pilot knows—and dreads—since ice may cause a sudden fuel shut-off and power loss.

But now, owners of aircraft with R1820 engines (Lodestar, Learstar, DC-3, Super DC-3) or R2800 engines (Convair 340, 440) need worry no longer about carburetor ice. This problem is solved by PacAero's Alternate Fuel Metering System, 100% successful in every installation, fully FAA certificated.

The Alternate Fuel Metering System offers positive protection against boost venturi and impact tube icing, by allowing unmetered fuel pressure to open the ice-locked poppet valve, thus providing instantaneous emergency engine power.

This modification is needed *now* on every R1820 and R2800 engine. It is immediately available at PacAero or through your service facility. Call or write for detailed information.

PACAERO ENGINEERING CORP.

3021 Airport Avenue, Santa Monica, California, EXmont 1-5281

A subsidiary of Pacific Airmotive Corporation, Burbank, California

Other PacAero Specialties: World center for Convair service, modification, and conversion to Allison propjet; custom design and installation of interiors; radar installation; fuel system expansion; overhaul and service; navigation, communication, electronic installation; airframe overhaul; painting; Spraymat anti-icing, de-icing systems; Learstar manufacture.

OFFERED EXCLUSIVELY BY
Verified
Aircraft
Value
BEECHCRAFT DISTRIBUTORS & DEALERS
This emblem on a used plane is your assurance of a top-value airplane, whatever its make or model. Don't guess—be sure! Get a VAV airplane.

How This Seal On A Used Plane May Save You Hundreds of Dollars:

The time to find out about a used airplane is before you buy it. A "bargain" airplane could end up costing more in the long run than a really top-notch airplane—and still not be one. That's why the best and safest way to buy any used plane is to choose a VAV plane.

Only hand-picked top trade-ins are considered for VAV certification. Then each one is thoroughly inspected by A&E mechanics. Compliance with manufacturer's recommended modifications and FFA Bulletins is checked. You are notified of any needed modifications before you buy.

Only after rigid VAV standards have been met is a VAV certificate issued, which includes a complete evaluation report. No wonder so many people say that a VAV used airplane actually costs less in the long run than any other.

So why take chances? See your Beechcraft distributor or dealer. Find out how little it actually costs to own a VAV plane—the best used plane value, dollar for dollar, that your money can buy. Low-cost financing available.

See These Beechcraft Distributors* and Dealers for VAV Aircraft:

ALABAMA
- **Birmingham**—*Southern Airways Co.
- **Montgomery**—Montgomery Aviation Corp.

ALASKA
- **Anchorage**—Sea Airmotive, Inc.

ARIZONA
- **Phoenix**—*Cutter Aviation, Inc.

ARKANSAS
- **Ft. Smith**—Ft. Smith Flying Service, Inc.
- **Little Rock**—Central Flying School

CALIFORNIA
- **Bakersfield**—Alpha Aircraft
- **Fresno**—Aero Sales & Service, Inc.
- **Long Beach**—Belmont Aviation Corp.
- **Oakland**—*Golden Gate Aviation, Inc.
- **San Bernardino**—Tri-City Airport
- **San Jose**—Evergreen Aircraft Sales
- **Santa Ana**—Martin School of Aviation, Inc.
- **Santa Monica**—Wade Air Service
- **Van Nuys**—*Norman Larson Co.

COLORADO
- **Denver**—*Combs Aircraft, Inc.

CONNECTICUT
- **Rocky Hill**—*Atlantic Aviation Corp.
- **South Meriden**—Meriden Aircraft Corp.

DELAWARE
- **Wilmington**—*Atlantic Aviation Corp.

FLORIDA
- **Jacksonville**—Ren-Lin Aviation, Inc.
- **Lantana**—Florida Airmotive, Inc.
- **Miami**—Tursair Executive Aircraft Services, Inc.
- **Orlando**—*Southern Airways of Florida, Inc.
- **St. Petersburg**—Pinellas Aircraft, Inc.
- **Tampa**—*Southern Airways of Florida, Inc.

GEORGIA
- **Albany**—Albany Air Service
- **Atlanta**—*Southern Airways Co.

ILLINOIS
- **Chicago**—*Butler Airplane Sales
- **Lockport**—Star-Line Aviation, Inc.
- **Mt. Vernon**—Outland Aviation Co.
- **Oak Park**—Aircraft Sales Corp.
- **Rockford**—Butler Airplane Sales
- **Springfield**—Capitol Aviation

INDIANA
- **Bloomington**—Indiana Aviation Activities, Inc.
- **Elkhart**—Hanley Air Activities, Inc.
- **Evansville**—Crescent City Aviation
- **Fort Wayne**—George H. Bailey Co., Inc.
- **Indianapolis**—*Roscoe Turner Aeronautical Corp.
- **Terre Haute**—Hulman Field Aviation, Inc.
- **Valparaiso**—Valparaiso Aero Service, Inc.

IOWA
- **Cedar Rapids**—Wathan Flying Service
- **Davenport**—*Elliott Flying Service, Inc.
- **Des Moines**—*Elliott Flying Service

KANSAS
- **Garden City**—Western Planesales, Inc.
- **Kansas City, Kansas**—*Topeka Aircraft Sales & Serv., Inc.
- **Russell**—Century Planesales, Inc.
- **Topeka**—*Topeka Aircraft Sales & Serv., Inc.
- **Wichita**—*United Airplane Sales, Inc.

KENTUCKY
- **Lexington**—*Blue Grass Airmotive, Inc.
- **Louisville**—*Blue Grass Airmotive, Inc.
- **Owensboro**—Owensboro Aviation Co.

LOUISIANA
- **Baton Rouge**—Baton Rouge Aircraft, Inc.
- **Shreveport**—*Currey Sanders Aircraft Co., Inc.

MARYLAND
- **Baltimore**—Pan-Maryland Airways, Inc.
- **Silver Spring**—Atlantic Aviation Service, Inc.

MASSACHUSETTS
- **East Boston**—*Atlantic Aviation Corp.

MICHIGAN
- **Grand Rapids**—Grand Rapids Aviation, Inc.
- **Iron Mountain**—Fontana Aviation, Inc.
- **Lansing**—*Francis Aviation
- **Muskegon**—Executive Air Transport
- **Ypsilanti**—Air-O-Fleet Corp.

MINNESOTA
- **Mankato**—Dean Brown

Rochester—*Gopher Aviation, Inc.
South St. Paul—*Gopher Aviation Sales
Worthington—Worthington Air Service

MISSISSIPPI
Jackson—Jim Hankins Air Service

MISSOURI
Kansas City—*Topeka Aircraft Sales & Service, Inc.
St. Louis—*Young Aviation Corp.
Valley Park—Midwest Aircraft Sales Corp.

MONTANA
Billings—Montana Aircraft Co.

NEBRASKA
Omaha—*Robert Graf, Inc.

NEVADA
Las Vegas—Aero Vegas, Inc.

NEW JERSEY
Teterboro—*Atlantic Aviation Corp.

NEW MEXICO
Albuquerque—*Cutter-Carr Flying Service
Aztec—Aztec Flying Serv., Inc.

NEW YORK
New York (Teterboro, N. J.)—*Atlantic Aviation Corp.
Rochester—*Page Airways, Inc.

NORTH CAROLINA
Charlotte—*Southern Airways Co.
Greensboro—Greensboro-High-Point Air Service, Inc.
Winston-Salem—*Piedmont Aviation, Inc.

NORTH DAKOTA
Omaha—Robert Graf, Inc.

OHIO
Cleveland—Donges Aircraft Sales, Inc.
Columbus—Columbus Aviation, Inc.
Findlay—Eddy Flying Service, Inc.
Vandalia—*Ohio Aviation Co.
Youngstown—*Youngstown Airways, Inc.

OKLAHOMA
Duncan—Duncan Aviation, Inc.
Enid—Dulick and Becker Industries
Muskogee—Sam's Flying Service
Oklahoma City—*Aircraftsmen, Inc.
Tulsa—*Tulsair Distributors, Inc.

OREGON
Medford—Valley Aero Sales of Oregon Ltd.
Portland—*Flightcraft, Inc.

PENNSYLVANIA
Dravosburg—Beckett Aviation Corp.
Erie—Derion Aviation
Philadelphia—*Atlantic Aviation Service, Inc.
Washington—Tri-State Aviation

RHODE ISLAND
Hillsgrove—Lippitt Aviation, Inc.

SOUTH CAROLINA
Charleston—*Hawthorne Aero Sales

SOUTH DAKOTA
Rapid City—Snedigar Flying Service

TENNESSEE
Chattanooga—ExecAir, Inc.
Knoxville—East Tennessee Aircraft, Inc.
Memphis—*SouthAire, Inc.
Nashville—*Blue Grass Airmotive, Inc.

TEXAS
Abilene—Abilene Aviation Co.
Amarillo—*Tradewind Airport Corp.
Corpus Christi—Gulf Coast Aviation, Inc.
Dallas—*J. R. Gray Co., Inc.
Texair, Inc.
El Paso—Westside Airport
Fort Worth—Ritchey Flying Service
Houston—*Business Aircraft, Inc.
Midland—Rich Air Co.
Plainview—Claude Hutcherson
San Antonio—*Alamo Aviation, Inc.
Tyler—Texas Aviation Corp.

UTAH
Salt Lake City—*Utah-Idaho Aircraft Co.

VIRGINIA
Lynchburg—Atlantic Aviation Corp.—Lynchburg
Norfolk—*Piedmont Aviation, Inc.

WASHINGTON
Seattle—Sulak Aviation Sales & Service
Spokane—Western Aircraft Corp.

WISCONSIN
Madison—Wiscon-Air, Inc.
Milwaukee—Butler Airplane Sales
Wisconsin Rapids—Butler Airplane Sales

needle when the engine is shut-down. This keeps the fuel control full of fuel at all times which, in turn, guarantees fast engine starts. Spring rate and spring load do not affect the operation of the discharge nozzle as Px pressure will vary to compensate for spring load.

The fuel discharge nozzles for the individual cylinders are of the air bleed configuration. Each nozzle incorporates a calibrated jet, the size of which is determined by (1) fuel inlet pressure available, and (2) the maximum fuel flow required for the engine. All nozzles for any particular engine model are calibrated to flow alike and are interchangeable between engines and cylinders. The fuel is discharged through these nozzles into an ambient air pressure chamber within the nozzle assembly. This fuel and air mixture is drawn into the individaul intake valve chambers and then into the engine cylinders. Since fuel pressure before the individual intake manifold nozzles is in direct proportion to fuel flow a simple pressure gauge can be calibrated in fuel flow/gal./hr. and be employed as a flow meter.

Our experience to date on supercharged engines has been very satisfactory with single-point injection of the fuel ahead of the impeller. To date this has been the preferred method of injecting fuel; however, Bendix has under development means for splitting the fuel (some ahead of supercharger for improved cooling and efficiency, balance for even distribution) as well as special turbo-supercharger applications.

The schematic diagram has been purposely presented showing the different functions of this injection system as separate units so that the explanation of its operation could be clearly followed. The actual hardware incorporates all sections, except the engine discharge nozzles, into a single compact unit eliminating any additional mounting brackets or external links. Tests, to date, have confirmed that no external cooling of this system by air blast tubes, to eliminate vapor formulation in the fuel, is required. The reason for this is that the fuel pressures through the unit are held close to inlet pressure up to the distributor valve (high fuel pressure through any metering unit is desirable to eliminate vapor formation in the fuel caused by increased fuel temperatures).

The design of the regulator section of this unit, by controlling diaphragm areas, etc., is such that accurate metering is accomplished with a low air signal from the venturi. This feature permits a large diameter at the choke of the venturi, which permits a "clean" air passage and minimum air pressure losses in the manifold.

From the pilot's standpoint, we have been most gratified by their consistent reactions and comments relative to power response and smoothness.

The elimination of icing due to fuel refrigeration in the intake system relegates the use of the "carburetor heat control" to only those conditions when severe external atmospheric icing exists. No primer system is needed. The RS system discharge nozzles can be installed in place of the primer fittings and the system primes the engine automatically during starting.

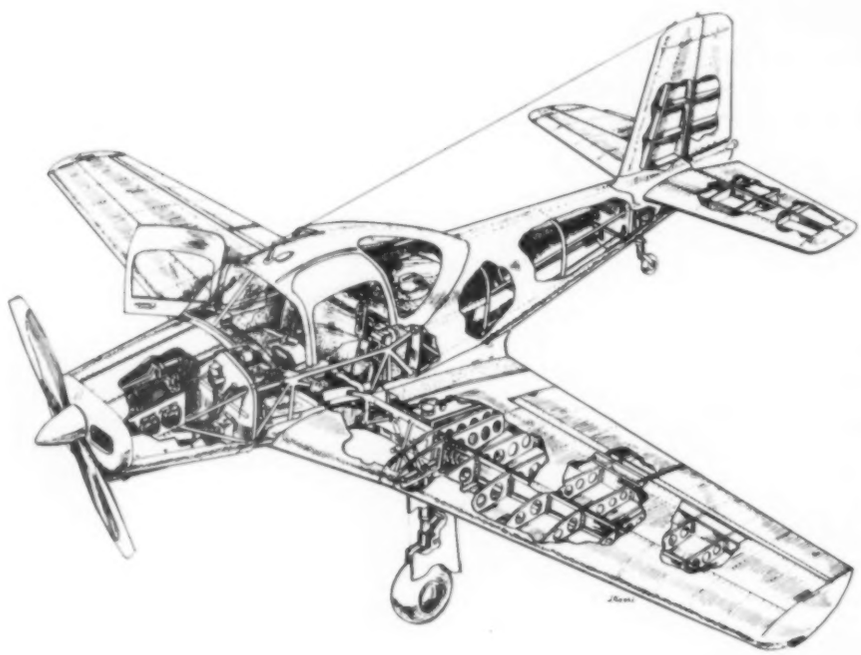
FAA FLY-IN

(Continued from page 46)

in its growth and development. James L. Anast, director of the FAA's Bureau of Research and Development, noted many projects under way at NAFEC which have direct or indirect effect on general aviation. He said that engineers are realistically considering the needs of general aviation in their planning of air traffic control. Dr. James L. Goddard, the FAA's civil air surgeon, explained the FAA policy of designated medical examiners and suggested that pilots urge their own family doctors to become designated examiners.

RESCUE-FIREFIGHTING BOAT for emergency use off airports on bays, shorelines, lakes or rivers can operate in water only 4 inches deep, throwing 2,250 gpm. of water from two nozzles and can make 1,500 gals. of foam. Demonstrated at Space Corp., Dallas, by Safety Jet, Inc., headed by J. B. (Jack) Story, the 40-50-mph. speedboat combines underwriter-approved components meeting military specifications with 18-26-ft. Turbocraft hulls and Buehler jet units and 135-235-hp. engines. They carry fire hose, chemicals, aqualungs, respirators, oxygen, litters and other essentials.

This is one of 35 Meyers Model 145's still flying — Meyers Aircraft will start delivering the 2-place high-perfomance, 145-hp. sport plane again in January. It cruises 162 mph. Cutaway sketch shows all-metal construction with tubular steel cabin section and two doors.



Meyers To Sell 2-Placer For $7,995

AL Meyer's beautiful little Model 145 two-place sport-business airplane has returned to the market at a price of $7,995 for the standard version and $8,750 for a deluxe Satellite version.

The all-metal Meyers is a high-performance two-place — it cruises 162 mph. at 7,500 ft., yet lands at only 45 mph. It is powered by a 145-hp. Continental engine, has 32 or 49-gal. fuel capacity for a criusing range of up to nearly 1,000 miles and climbs 960 fpm.

Al Meyers said the revived Model 145 will feature improvements over the model formerly produced, which was widely respected and admired but produced in only a small quantity. About 35 of the pretty little 145's are still in operation.

Meyers Aircraft Co., Tecumseh, Michigan, discontinued its production to concentrate on developing the 4-place Model 200. Al himself has never gone in for large-scale production or marketing. He is more of a custom producer than anything else. "We've had so much comment during the last couple of years on the need for reviving our high-performance Model 145

(Continued on page 66)

Flight view shows large glass area of 2-place cabin, featuring 360-degree visibility. Main gear is retractable.

An Oasis...

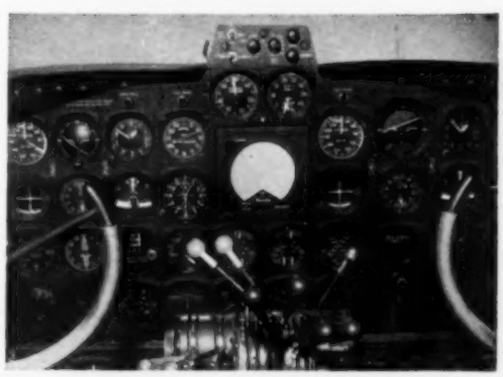
for those who want the best in modification service

...that's OHIO AVIATION

All Beechcraft Modification Services Available

For many years Ohio Aviation has had the reputation for supplying comprehensive modernization and modification services to private and business plane owners. Recently added—a number of Beechcraft approved and engineered modifications that provide better appearance and increased performance. Here are a few of the modification and modernization services available at Ohio Aviation. We will welcome the opportunity to discuss them with you. For information write or call Charles Groff or James Speer at Ohio Aviation—TW 8-4646.

Super 18 Short Exhaust Stacks—reduce vibration, and eliminates back pressure.

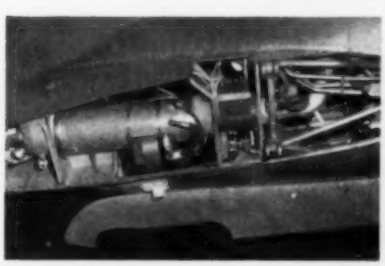


Complete testing and maintenance for all types of radar. Service by factory trained technicians.

THE OHIO AVIATION CO.
Dayton Municipal Airport
VANDALIA, OHIO

Super 18 landing gear doors. Encloses wheels. Reduces drag in flight.

Utility Cabinet. Drink and Snack bar complete with thermos holder, glass, rack, ice provisions, etc.



50,000 BTU Heaters—airline surface combustion type. Comfortable heat year around.

WILLIAM P. LEAR (center), the aircraft electronics manufacturer, has become the first U. S. aviation leader to receive France's "Great Silver Medal" for contributions to French air progress. His Lear autopilots are used on French Caravelle airliners. Award was presented by General Martial Valin (left) and Julien Tardieu (right).

NPA COMPASS COURSE

(Continued from page 33)

Some of the best talent ever assembled at a national meeting limited strictly to pilot talk held forth in a fast moving program covering everything from modern chart reading to the proper use of omni. Ed King of King Radio, chairman of a special industry committee formed after the rhubarb over FAA's announcement of what kind of radio we would have to have in the future, cleared the air considerably and re-assured the pilots that chances were present equipment would be used for a long time to come and additional frequencies and frequency spacing would come as a needed development rather than by FAA regulation (see editorial this issue).

Crocker Snow, director of the Massachusetts Aeronautics Commission and airspace chairman of the General Aviation Council, outlined the efforts to get the airways floor for uncontrolled flight raised from 700 feet to 1,500 feet, or an arrangement whereby uncontrolled VFR flight would be possible 500 feet above all obstructions. While there's still considerable convincing to do around Washington, there is hope and the GAC will pursue this matter relentlessly.

"Getting Acquainted With Omni" by Shelby Kritser, newspaper executive and airport operator of Amarillo, Texas, proved to many pilots in the audience that there was a lot more to omni navigation than they thought. Many veterans admitted Kritser's briefing opened up a whole new world of omni usefulness.

One of the most intriguing sessions of the entire three-day meeting was provided by United Airlines' meteorology instructor, Howard Hoffman, on the subject of the "Mountain Wave," which accounts for violent clear air turbulence. He explained, with the use of movies, how it occurs and where to expect it.

FAA's George Kriske, air traffic management chief in Kansas City, put a lot of VFR pilots at ease in explaining the use of radio in high density areas and in taking advantage of the many services for pilot briefing on the ground.

James F. Nields of Ware, Massachusetts, NPA director and founder member, chairmaned a productive round-table forum on "Planning Future of IFR Equipment to Meet General Aviation Needs." Bert Denicke, chief of Requirements Branch of FAA's Bureau of Research and Development at Atlantic City, presented a forecast of anticipated general aviation flight activity in 1970 that indicated tremendous growth in high-performance aircraft traffic, especially with instrument capabilities. He outlined the many technical developments now being studied and emphasized that the FAA is making a hard effort to keep equipment simple or of low weight.

William E. Jackson, FAA's director of development, explained the new distance measuring devices under contract by Narco, pictorial displays, a new 360-channel transceiver with 50-kilocycle spacing, low cost radar transponders and other devices to make it practicable for the average pilot to take advantage of radar traffic control. FAA is also considering a ground-speed meter attached to DME.

Denicke presented a chart developed with the help of the General Aviation Council which could possibly compose the total equipment list of a high performance private aircraft in the 1965 to 1970 period. This projection contemplates a fully instrumented airplane for a solo pilot with emphasis on cutting down the workload during instrument flight. The equipment is listed in order of importance and the owner-pilot would stop at any point down the list to satisfy his particular needs and have a "package" which

FIRST STEP FOR CONSTRUCTING NEW $8,000,000 EXECUTIVE AIRPORT IN FORT WORTH was taken recently when Stephen J. Holland (left), secretary of Sphere, Inc., and S. E. Tyson of Tyson Steel Building Co., contracted for 26 T-hangars. Airport will have 6,000-ft. runway, hangar space for 240 aircraft, motor hotel, restaurant, terminal-office building and other facilities. Artist's sketch is pictured below.

could be purchased for a given number of dollars. A total of $7,500 would take you down to the glideslope receiver but before you get to the pictorial display. Some of the prices are based on equipment now in production. Here it is:

Omni Receiver, 10 lbs., 3.5 amps, $1,000.

Communications Transceiver (360 channel, 50 kc. spacing), 15 lbs., 6.5 amps, $1,500.

Automatic Direction Finder, 8 lbs., 1 amp, $800.

Single Axis Autopilot (with heading lock), 11 lbs., 2.5 amps, $1,500.

Distance measuring equipment, 15 lbs., 6.5 amps, $2,500.

Marker Beacon Receiver (3-light), 1 lb., $230.

Glideslope Receiver, 8 lbs., 2.4 amps, $750.

Pictorial Display (displays omni and DME position), 8 lbs., .6 amp, $1,800.

"Junior Beacon" (boosts picture on ground radar scopes), 3 lbs., $400.

Ground Speed Meter (converts DME info to direct speed indication), 5 lbs., 2.5 amps, $300.

Stand-by Communications Transceiver (limited frequencies), 5 lbs., $250.

Autopilot (two additional axis), 10 lbs., $1,500.

Second Omni Receiver, 10 lbs., 3.5 amps, $1,000.

"Getting Flight Information" was discussed by Jim Ray of the FAA's Aeronautical Center at Oklahoma City. With the flight service stations (formerly air traffic communication stations) relieved of heavy IFR communications, they can now offer vital and additional services to VFR pilots including weather information and forecasts, pilot reports and a flight following service, now available on request. Jeter Prewit, also of the Center, explained the advances in pinpointing thunderstorms by radar on the ground to make up for the stargazer service now being phased out.

TWA Captain Bob Buck gave a witty, philosophical and brilliant discourse on "Weather, Traffic Control and You." He emphasized the absolute necessity of recognizing your own limitations as a pilot and your equipment, the need for keeping things organized in the cockpit and thinking ahead for the unexpected that always happens.

Richard Collins of Air Facts magazine and Crocker Snow presented a two-man seminar on "Single-Engine Instrument Flight" and drew heavily on their own experiences to prove that IFR operations can be actually safer under certain conditions than VFR and that for full utility of the modern single-engine craft an instrument rating is a necessity.

Blessed with good weather, the flight operations held in conjunction with the annual meeting resulted in scores of flight proficiency checks, introduction to instrument flight and flight demonstrations. Nine pilots received seaplane ratings at the seaplane base at the Western Hills front door.

The annual pilot of the year award went to Mrs. Aileen Saunders of El Cajon, California, who won the All Woman Transcontinental Air Race two years in a row. The comely aviatrix received the citation from Leighton Collins, editor of Air Facts magazine, who said, "Winning the race could be a matter of luck but winning two in succession is a sure indication of her outstanding ability as a pilot."

Dr. William Requarth of Decatur, Illinois was elected president of the organization; L. S. (Doc) White of Portland, Oregon, was elected first vice-president; Reed Thompson, Lima, Ohio, second vice president; Frederick B. Lee of McLean, Virginia, and former CAA administrator, was re-elected treasurer; David H. Scott of Washington was re-elected secretary. New directors include Marilyn Link of New York City, Michael Loening of Salem, Idaho, and Marion L. Short of Lexington, Kentucky.—G.E.H.

IF YOU ARE FORTUNATE ENOUGH TO OWN A

NAVCOM 100

TRANSMIT 360
RECEIVE 560
CHANNELS

YOU CAN GET FACTORY MODIFICATION FROM MOTOROLA RIGHT NOW TO EXTEND YOUR FREQUENCY RANGE TO 135.95mc WITH 50kc SPACING, PROVIDING 360 TRANSMITTER AND 560 RECEIVER CHANNELS.

THIS PROVES AGAIN YOU GET GREATER UTILIZATION FROM YOUR AIRCRAFT WITH MOTOROLA PRODUCTS

See your Motorola dealer about converting your Navcom 100. Modification cost is only $495.00.

MOTOROLA Aviation Electronics Inc.
A SUBSIDIARY OF MOTOROLA INC. 10916 W. Washington Blvd., Culver City, Calif.

The finest product in the air deserves the finest service on the ground

. . . certified BEECHCRAFT Service

To obtain the best service for your Beechcraft and for prompt attention to maintenance and overhaul requirements, visit the Certified Beechcraft Service Stations listed.

AIRCRAFTSMEN, INC.
Will Rogers Field
Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

ATLANTIC AVIATION CORP.
- Teterboro Airport
  Teterboro, New Jersey
- Logan International Airport
  East Boston, Massachusetts
- International Airport
  Philadelphia, Pennsylvania
- New Castle County Airport
  Wilmington, Delaware

BUSINESS AIRCRAFT, INC.
9011 Randolph Street
Houston International Airport
Houston, Texas — MI 4-5595

BUTLER CO., AVIATION DIVISION
Midway Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Manager
Love Field, Dallas, Texas

GREENSBORO-HIGH POINT AIR SERVICE, INC.
Greensboro-High Point Airport
Greensboro, North Carolina

ELLIOTT FLYING SERVICE
- Municipal Airport, Des Moines, Iowa
- Municipal Airport, Davenport, Iowa

THE NORMAN LARSON CO. PLANESERVICE, INC. (Service Division)
Van Nuys Airport, Van Nuys, Calif.
(Los Angeles Area)

PIEDMONT AVIATION, INC.
Smith Reynolds Airport
Winston-Salem, North Carolina

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

TEXAS AVIATION CORPORATION
G. K. Roberts, Pounds Field
Tyler, Texas

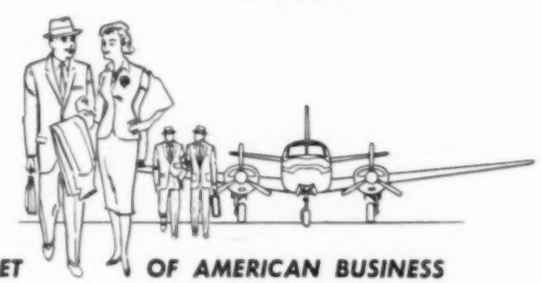
TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 8, Municipal Airport, Tulsa, Oklahoma

UNITED AIRPLANE SALES, INC.
New Municipal Airport
Wichita, Kansas

Beechcraft



BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

So easy to fly that new pilots have actually learned to fly in it, the Beechcraft Travel Air is an easy step upward for single-engine pilots.

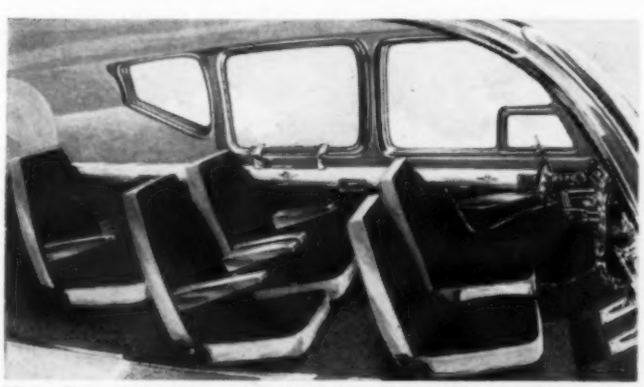
Fly the Travel Air before you decide!

Still The Easiest To Fly Twin...19" Longer Inside...Room For 5...And 200 mph Fast!

Professional pilots love it—but you don't have to be a pro to fly this fast, friendly and predictable Beechcraft Travel Air. Whether you're a seasoned single-engine pilot, or just learning to fly, you'll find the Beechcraft Travel Air so easy to start, taxi, take off, fly and land that you'll hardly realize you're bossing two engines instead of one.

But that's just one of the many reasons the Travel Air is the outstanding business twin in its price class. Here are a few others:

- **New 19" longer, roomier cabin** with 17½ cu. ft. more space for passengers and baggage. Larger than any other twin in its class.



New 5-seat interior with individually reclining chairs has plenty of head room, hip room and leg room—even for 6-footers—plus big baggage area. All interiors custom finished in rich fabrics and leather trim in your choice of colors.

- **Quietest twin in the sky.** Even at 200 mph, you cruise relaxed, converse easily in "Quiet-Sealed" comfort that no other twin can match.
- **A real "miser" on fuel**—up to 11 miles per gal.
- **Extra-long range**—up to 1,410 miles non-stop.
- **Big "flight planned" instrument panel,** with plenty of room for a wide range of newest radio and instrument equipment within easy reach.
- **Ruggedly built for extra-low maintenance** that keeps your operating costs 'way down.
- **New comfort control system** that keeps you warm in winter, cool in summer—automatically.

You owe it to yourself and your company to see and fly the new Travel Air at your Beechcraft distributor's or dealer's. For illustrated Beechcraft brochures and details of low-cost Beech financing and leasing plans, write Public Relations Dept., Beech Aircraft Corp., Wichita 1, Kansas, U. S. A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

New Business In The Hangar

First Gulfstream Demonstrator Turns Sale for Atlantic Aviation; Distributor Now Replacing It

UNTIL Atlantic Aviation invested in one, nobody in the so-called executive "million-dollar airplane" sales business really knew for sure whether a distributor could afford a demonstrator airplane. Atlantic Aviation didn't know either, but went ahead and equipped a Grumman Gulfstream of its own. After 107 hours of flight time in it, the demonstrator brought a sale — it was purchased last month by a corporation which needed immediate delivery and couldn't wait.

"We know now that a demonstrator pays off — even in the Gulfstream class," says Joe Rhodes of Atlantic Aviation. "Some prospects want immediate delivery and only an available demonstrator can turn the sale. At any rate, we believe in it and are now equipping our second Gulfstream demonstrator."

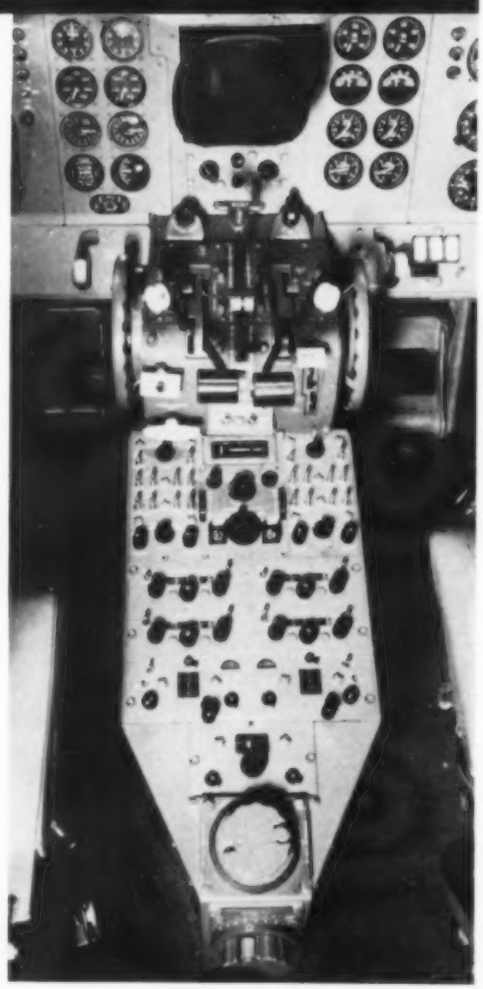
Atlantic Aviation, incidentally, has now sold 20 Gulfstreams.

NEW 325-HP. BOEING TURBOPROP, Model 502-10W, is undergoing FAA certification tests for commercial marketing. It weighs 325 lbs., has 2,600-rpm. prop shaft speed and normal continuous rating of 270 hp. It is a free-shaft turbine with single-stage components and is equipped with a special second stage governor for pitch control and a pneumatic governor to prevent propeller overspeed.
—(Boeing Photo.)

REMMERT-WERNER, INC., Lambert Field, St. Louis, installed two fresh Engine Works engines in Elmo Halverson's Johnson Wax Super-92 DC-3. . . . Ron Breckenridge's Chemstrand Twin Beech had a 1,000-hr. inspection. . . . Gus Rahm brought in his Schenley Industries Grumman Goose for new exterior paint, 1,000-hr. inspection and landing gear overhaul. . . . One of Owens-Illinois Glass Company's DC-3's was brought to R-W's Pompano Beach shop in Florida for installation of two fresh Engine Works Super-92 engines. Pilots were Roger Byrne and Hank Gausman.

PACIFIC AIRMOTIVE CORPORATION'S Burbank Division has delivered B. F. Goodrich's Lodestar to Hume Earnest and T. E. Parsons after installing Aircraft Tank Service outer panels with integral fuel tanks and dump chutes, Learstar radome and airspeed system. Other work included removal of baggage compartment fuel system and installation of 200-amp generators and new instrument panel. . . . Lloyd Santmyer's Allegheny Ludlum Steel Lodestar received 100-hr. periodic, relicense, fuel tank strip and reseal, 5-way Learstar-type fuel selector valves, tail-door access conversion, oxygen system modification and installation of heated coffee service. . . . Sarah Mellon Scaife's Convair 440 was returned to Pittsburgh by Jim Leonard after maintenance and relicensing. . . . Grumman has delivered to a European customer a Gulfstream completely outfitted by PAC, includ-

COMPARE
Custom Installations



Associated Radio offers a complete service in custom installations, designed to hold weight to a minimum and provide easy access for servicing.

You have the assurance of high quality workmanship, a large inventory of fine brand equipment (to save you time and money), and the bonus of an unconditional one-year guarantee.

Aircraft electronics is our only business and we maintain facilities with the best and most complete test equipment to insure that *your* installations are the finest possible.

Let's get associated!

ASSOCIATED RADIO LOVE FIELD DALLAS

Associated Radio
SERVICE COMPANY
Phone FLeetwood 7-6521
FAA Approved Repair Station No. 3664
3508 Love Field Drive *Dallas 35, Texas*

ing custom interior, radar and electronics installations, oxygen system, exterior paint and electrical system modifications. Work was performed in conjunction with Aero Interiors Co. and Qualitron, Inc. . . . Frank Dolinski's two Aerojet General Martin 404's received spar tank work and JATO installations. . . . Paragon Tool Die & Engineering's tricycle-gear Twin Beech conversion was in for custom painting. . . . R. C. van Buskirk brought in Denver-Chicago Trucking's DC-3 for engine and prop overhauls. . . . Ken Unger's Belle Baruch Twin Beech was in for engine work. . . . One of Union Oil's DC-3's, flown by Don McKee, was in for inspection and paint. Jim Stevenson is chief pilot.

WELSCH AVIATION COMPANY has opened offices in the Marine Terminal Building, LaGuardia Airport, in New York, and J. C. (Jim) Welsch says it's part of a planned expansion program culminating 36 years of aircraft sales. James C. Welsch, Jr., has joined the staff after completing a hitch in the service. Additional personnel will be announced soon. Welsch will retain his downtown office, but all activities will center at the LaGuardia Terminal.

AIRESEARCH AVIATION SERVICE Division of the Garrett Corp., Los Angeles International Airport, delivered a DC-6A to Hawaiian Airlines following installation of two new galleys, a third lavatory and coat closets, and relocation of seating to meet latest MATS specifications. . . . Harry Heckinger and Al Lucas accepted National Cash Register's DC-3 after complete overhaul of landing gear, hydraulic system, removal and inspection of wings, fuel and oil tanks, short-stack modification, control surface recovering, interior refurbishing and exterior painting. . . . Arctic-Research Lab of Point Barrow, Alaska, sent in its Lodestar with Chief Pilot Bob Fisger and Lloyd Zimmerman for installation of 100,000-BTU Janitrol heater, engine change and exterior painting. . . . Bill Marr brought in his Clark Bros. DC-3 for de-icer boot change, painting of landing gear, engine inspections and minor interior modifications. . . . Republic Aviation Pilots L. R. (Pete) Collins and Dick Watson received delivery of their Con-

CUSTOM CABIN FOR LOCKHEED JETSTAR has been created by AiResearch Aviation Service in a precise mockup-showcase so that purchasers of the new 4-jet corporate transport can see a finished interior and craftsmen can install cabin interior details from experience. Chairs are latest Burns and Hardman models designed for the JetStar.

Specialized Industrial Aid Aircraft

Douglas A-26 Type

Certificated

Low time serviceable engines

Partial "MONARCH 26" weight reductions applied

"MONARCH 26" longitudinal stability incorporated

"MONARCH 26" improved fuel boost system installed

Other "MONARCH 26" developments available

Starting Price $13,750

ROCK ISLAND OIL & REFINING CO., INC.

AIRCRAFT DIVISION

MUNICIPAL AIRPORT **HUTCHINSON, KANSAS**

vair 340 after installation of cabin radio and miscellaneous other items. . . . Johnson & Johnson's Convair 340 received stainless steel overlay, compliance with AD notes and miscellaneous interior items. . . . The Garrett Corp. had its own Convair 240 in the hangar for updating of miscellaneous aircraft systems.

ON MARK ENGINEERING CO., Van Nuys, Calif., has named James P. (Jim) Siberell chief pilot and director of sales to push an expanding sales program with the new fully-pressurized Marksman B-26 conversion already in production by On Mark. The 10-place Marksman is priced in the $300,000 range, has speeds up to 365 mph. and range up to 2,500 miles.

EXECUTIVE AIRCRAFT SERVICE, Redbird Airport, Dallas, had R. F. (Wimpy) Neel's E. W. Brown, Jr., DC-3 from Orange, Texas, for periodic inspection, landing gear overhaul and recovering of all control surfaces. . . . Nelson U. Rokes brought in a Procter & Gamble Grumman Gulfstream for additional interior work. . . . V. (Red) Irwin brought in two of his Pittsburgh-based Gulf Oil Lockheed Gulfstars for miscellaneous items and Del Radcliffe brought in his Houston-based Gulf Oil Lockheed Gulfstar for minor work.

ATLANTIC AVIATION CORPORATION has announced recent management changes by W. E. Richards, executive vice president. Edward R. Cain, formerly sales manager for the New York Division at Teterboro, became vice president and general manager, succeeding V. E. Larimer. Wilmer D. Crawford was named sales manager. For Atlantic's Boston Division, William A. Haskell was moved from the sales department to be assistant vice president and general manager, succeeding John M. Erskine.

PACIFIC AIRMOTIVE CORP., Burbank, has appointed Harold H. Warden sales manager of its Burbank Aircraft Division and PacAero Engineering Corp. He will be in charge of sales of all aircraft modification and conversion work at both PAC and PacAero's Santa Monica plant and will administer PAC's Grumman Gulfstream sales program. Warden was formerly commercial transport sales manager for Lockheed's Georgia Division.

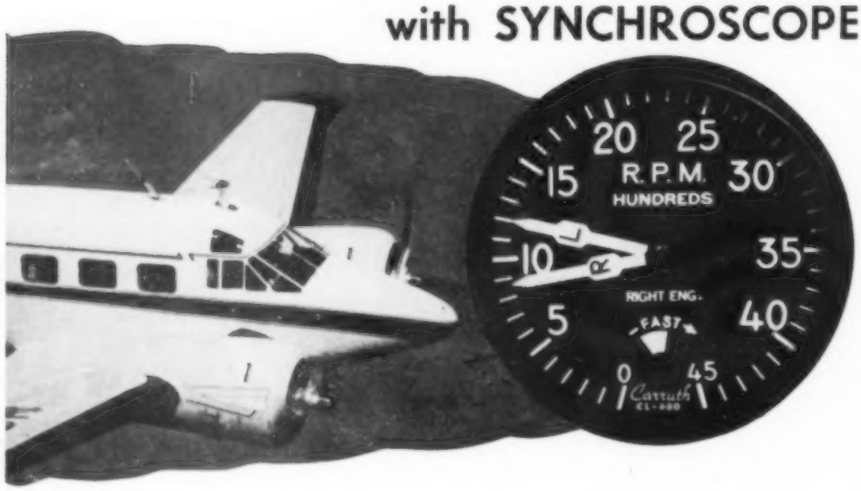
MATTITUCK AIRBASE CORP., Linden, N. J., had Bob Darnell's Johnson & Johnson DC-3 in for major inspection and removal of wings for attach angle inspection and an engine change. . . . Al Shay brought in Charles Pfizer & Company's DC-3 for engine change and inspection. . . . Walt Burd's Linden Flight Service Beech 18 was in for a single engine change, landing gear overhaul and inspection. . . . Ray Cooper brought in Mrs. O. Coffey's Aero Commander for periodic inspection, certificate airworthiness for export and miscellaneous work. . . . Also in for work were Paul Tishman's Learstar, General Aero's Bonanza, Hirsh's Cessna, Harriman's Widgeon and the Beech E18S belonging to Erwin Wasey, Ruthrauff & Ryan.

SUNAIR ELECTRONICS, Ft. Lauderdale, Fla., has a new high frequency transceiver for domestic and foreign commercial and military aircraft. Marketed as the T-22-RA, the new unit weighs only 15 lbs., is TSO'ed in FAA's highest "A" category and saves about 60 lbs. over other models through the use of transistors, diodes, etched circuits and Sunair's solid-state toroid power units.

PIEDMONT AVIATION, Winston-Salem, performed 4,000-hr. inspection, engine change and propeller overhaul on R. O. Brainard's Whirlpool Corp. DC-3. . . . A 4,000-hr. wing doubler change and wing overhaul were performed on a General Motors DC-3. . . . Don Stover's Champion Spark Plug DC-3 was in for engine change and de-icer boot replacement. . . . Central Virginia Electric Coopera-

SMOOTHER TWIN-ENGINE PERFORMANCE
WITH THE CARRUTH LABORATORIES

DUAL TACHOMETER
with SYNCHROSCOPE



The Carruth Laboratories Model CL 680 Tachometer shows simultaneously on a single dial the RPM speed of each engine while the synchroscope indicates relative speed of the engines. The synchroscope stands still when engines are synchronized, but when they are running at different speeds it revolves indicating the right engine is running faster or slower than the left engine.

Specifications

Weight	Approximately 2 lbs.
Humidity	95%
Altitude	—1,000 ft. to 40,000 ft.
Range	0 to 4,500 RPM
Temperature Range	—30°C to +70°C
Accuracy	In accordance with MIL-1-7119 and AS404A
Warranty	One year against defects in material or workmanship

Write, wire or call Carruth Laboratories today for complete information, price and name of the distributor in your area.

We offer complete instrument repair, overhaul and manufacturing services in our modern 3-acre plant in Dallas.

2726 Lombardy Lane, Dallas 20, Texas **FL 7-7321**

CARRUTH LABORATORIES, INC.
LICENSED MANUFACTURERS OF JACK & HEINTZ GYRO & AUTOMATIC PILOT PARTS

AUTHORIZED
Cessna
SERVICE

The Cessna dealer displaying the factory authorized service sign represents a symbol for friendliness, hospitality and expert Cessna service featuring

factory-trained mechanics . . .

factory-approved equipment . . .

and a complete stock of genuine factory parts.

Make the most of your Cessna's usefulness by depending on the Authorized Cessna Service Centers listed for assurance that your airplane is always ready to go, always in top condition for reliability, performance and comfort.

Your Cessna is always ready to go

when you depend on the factory authorized Cessna Service Centers listed below.

Aircraft Sales Company
Gregg County Airport
Longview, Texas
Meacham Field
Fort Worth, Texas

The Air-Oasis Company
3353 Lakewood Boulevard
Long Beach 8, Calif.

Airnews, Inc.
260 E. Terminal Drive
San Antonio, Texas

Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Coastal Aviation, Inc.
4906 Tampa Bay Blvd.
Tampa International Airport
Tampa 3, Florida

Cruse Aviation, Inc.
International Airport
Houston, Texas

Executive Aircaft Company
701 Perimeter Road
Kansas City, Missouri

Lynch Flying Service, Inc.
Logan Field Box 1575
Billings, Montana

Macon Air Service, Inc.
P. O. Box 2036
Macon, Ga.

Ragsdale Aviation, Inc.
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

Kenneth Starnes Aviation Service
Adams Field
Little Rock, Arkansas

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

Wings, Inc.
Wings Field
Philadelphia 18, Pa.

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

tive's Piper Apache was in for double engine change. . . . Miscellaneous mechanical work and radio work were performed for Joe Pinnix' Winn Dixie B-23. . . . Celanese Corporation's Lodestar received double engine change.

SOUTHWEST AIRMOTIVE, Love Field, Dallas, listed numerous personnel changes. Harlan Ray, formerly president, became chairman. Winston Castleberry and George W. Jalonick III, formerly executive vice presidents, became presidents of the service and distribution divisions, respectively; and the distribution division listed the following assignments: B. W. Jackson, operations director; Bert Conner, Jr., Kansas City district manager; W. F. Gallemore, commercial sales manager; R. D. Saunders, Dallas district manager; Gerald Coke, dealer sales manager; Richard S. Seger, merchandising director; James K. Briley, technical assistant; Mrs. Rita Harvell, administrative assistant; Paul Ivey, technical sales manager; M. A. (Dutch) Barbettini, sales director, and R. M. Miller, inventory control manager. . . . **BUSINESS WINGS, INC.,** the Cessna distributorship in North Texas, based at Southwest Airmotive, has named Jerry Mann president, succeeding James H. Craddock, who resigned to become aviation sales manager of Humble Oil. Paul Kennedy is chairman of the firm.

Tulsair . . .

Your BEECHCRAFT HEADQUARTERS in TULSA

THE MOST QUALIFIED WITH

- **FACILITIES**
- **PERSONNEL**
- **EQUIPMENT**

and

- **DESIRE**

TO PROVIDE THE BEST POSSIBLE
JOB IN MAINTENANCE, FLIGHT TRAINING, SALES,
TRANSIENT SERVICE, RADIO AND ELECTRONICS

Tulsair
DISTRIBUTORS INC.
GAIL CLARK, PRESIDENT
P. O. BOX 2146 ✓ HANGERS 7, 8, 9, & 10 ✓ MUNICIPAL AIRPORT ✓ TULSA 1, OKLAHOMA ✓ TELEPHONE TE 5-7651

SPARTAN AIRCRAFT'S AVIATION SERVICE DIVISION, Municipal Airport, Tulsa, has named William (Bill) Kolb, sales representative. . . . Arthur D. Knapp's Mechanical Products Lockheed PV-1 was in for fairing in and painting of wing surfaces. . . . J. H. Creel's Rodman Oil Douglas A-26 received an engine change. . . . Miscellaneous work was performed on Frank Auernig's Kewanee Oil's DC-3. . . . L. L. McMillan brought in his H. C. Price DC-3 for rudder work. . . . Jack Bald's Mesta Machine Lockheed 14 received double engine change. . . . Fuel tank repairs were made on Guy Polston's Service Pipe Line Lodestar. . . . Bob Griscom's Daisy Manufacturing Beech 18 received exchange metal-covered control surfaces. . . . Chairs and interior were reupholstered for Frank Ernst's Franklin Supply de Havilland Dove.

DALLAS AERO SERVICE, Love Field, Dallas, performed Technical News Sheet work on three more de Havilland Doves. They were those of Hunkin Conkey Construction of Cleveland, Hal Mooney, pilot; Warren Petroleum, Tulsa, Clare Kingsbury, pilot, and Lear, Inc. . . . Leeward Island Airlines' de Havilland Heron was brought in for airframe modifications, interior and other work. . . . Winston Harper's Cosden Petroleum Dove received an engine change. . . . Dave Guin brought in his Austin Motors Beech 18 for Hartzell propellers, airstair door, nose cone and radio installation. . . . Malcolm Tory brought in Mene Grande Oil's Aero Commander from Venezuela for his annual routine work. . . . Central Oil's Aero Commander was brought in from Laurel, Miss., by Carl Hastings for double engine change. . . . Shell Oil's Venezuela-based Heron will receive a new interior.

HOWARD AERO SERVICE DIVISION, International Airport, San Antonio, delivered Martin Weirauch's Frontier Chemical Howard 250 with complete rewiring, dual communications, dual navigation, Bendix radar, Howard power packs, flap and tail modifications and new interior. . . . Doc Copeland brought in Ruther Oil's Lodestar for new interior, new paint, short stacks and radar installation. . . . Ernie Blagg's Hess Pipe Line Lodestar was in for paint and interior rework. . . . Double engine change was performed on Leonard Smith's Western Pipe Line Lodestar. . . . A. E. (Eddie) Custer's Northern Natural Gas Super Ventura received double engine change and repairs. . . . Also in for work were Bill Burke's Pure Oil PV-1, Dick Yoakam's Ohio Oil Super Ventura, Tommy Teate's Volusia Locations Super Ventura, Earl Pynch's Borg-Warner Super Ventura, Wes Stetson's Pacific Lumber Super Ventura and Dick Ranaldi's Petan Company Howard 500.

AROUND THE WORLD IN TEN DAYS was solo trip feat accomplished last month by Chuck Banfe in a Super-V twin-engine conversion of the Bonanza. He started and ended the 21,000-mile flight at Honolulu with stops at Oakland, Battle Creek, Mich., New York, Providence, R. I., Gander, Shannon, Rome, Beirut, Karachi, Calcutta, Bangkok, Manila, Tokyo and Wake Island. Banfe is pictured at left in Air Cruiser's life vest presented by Mickey Parr of the Garrett Corp. Bay Aviation Services, Oakland-San Francisco, produces the Super-V, powered by two 180-hp. Lycoming engines. Banfe is a Pan American Airways pilot. He carried 275 gals. of fuel — 175 gals. more than the Super-V's normal capacity.

KING RADIO CORP., Merriam, Kansas, has named William E. Kelley general sales manager to expand the firm's sales and service organization, which already includes 140 authorized King dealers. Kelley was formerly aviation sales executive for Grit Printing in Wichita. . . . Edward J. King, Jr., president, has named Jack Weltsch as vice president-finance and James R. Harris as comptroller and manufacturing director. . . . Bud Glover has been named Southeastern district sales manager.

Kelley

BENDIX RDR-1D AIRBORNE WEATHER RADARS are being installed on all of TWA's Model 749A Constellations at Kansas City. TWA's orders with Bendix totalled over $425,000.

AEROSMITH CORP. is a new business aircraft service center opened on Addison Airport in Dallas last month by Bob Smith, president; Jack L. Noble, vice president, and Bob Burk, vice president. Aerosmith says it is equipped for complete radio sales, installations and repair along with aircraft sales, service and maintenance.

LEASE OF 15 COLLINS WP-103 WEATHER RADAR SYSTEMS has been negotiated by Mohawk Airlines with Collins Radio Company, marking first time Collins has leased electronics to an airline, with lease running five years. New Collins radar weighs only 49.9 lbs. Mohawk is the first airline to use it.

Airmen's Calendar

Nov. 15-17—ADMA's 36th Meeting, Riviera Hotel, Palm Springs, Calif.

Nov. 16-17—Beech Aircraft's Annual International Sales Meeting, Wichita, Kansas.

Nov. 19-20—Zaddie Bunker Days, honoring Flying Grandmother Bunker with Fly-In Breakfast Air Show and Exhibits (interested exhibitors contact Aero Palm Springs, sponsor), Palm Springs, Calif.

Dec. 2-4—Norman Larson's Annual Showing of 1961 Beechcrafts, Palm Desert Airports, Palm Springs, Calif.

Dec. 6-8 — 21st Annual National Aviation Trades Association Convention and National Air Taxi Conference, Biltmore Hotel, Oklahoma City.

Dec. 17—24th Wright Brothers Lecture, Natural History Building, Smithsonian Institution, Washington, D. C.

Jan. 23-25—29th Annual IAS Meeting, Hotel Astor, New York.

EXECUTIVE BONDING

an exclusive **Rěbat.** *engineering achievement eliminates mechanical failure*

NEW REBAT EXECUTIVE . . . **Executive Bonding . . . completely prevents plate-destroying vibration damage. Only Rebat has it!** Add other exclusive aircraft battery features plus a quarter century of dependable performance and you'll see why Rebat Aircraft Batteries are first choice of men who build, own, fly and service aircraft.

Rěbat
EXECUTIVE
World's Finest Aircraft Battery
EXECUTIVE BONDING — — — MICRO-FINE HIGH CAPACITY MATERIAL
MONOLITHIC CONSTRUCTION — — — NEW HIGH STRENGTH CASE

THE ELECTRIC AUTOLITE CO. Battery Division Toledo 1, Ohio

Here's another flight view of the new 2-place Piper Colt.

NEW PIPER COLT

(Continued from page 31)

The standard Colt includes in its $4,995 price, electric starter, generator, dual controls, altimeter, airspeed, ammeter, compass, oil pressure and temperature gauges, recording tachometer and 18-gal. fuel tank in the left wing.

The Custom Colt will sell for $5,995 and include sensitive altimeter, turn and bank, arm rests, cabin speaker, dome light and navigation and instrument lights, Narco Superhomer and radio shielding.

The Super Custom Colt at $6,995 incorporates full instrumentation including engine-driven vacuum pump, artificial horizon, directional gyro, 8-day clock, manifold pressure gauge, outside air temp gauge, rate of climb indicator and turn and bank, along with the Narco Superhomer plus the new Piper AutoNav radio compass.

Standard equipment on all models includes Sensenich metal propeller, hydraulic brakes, individually adjustable seats, parking brake, mixture control, 20-amp battery, electric fuel gauge, cabin heat and ventilation system and ash trays.

Accessories and their prices include speed fairings (wheel pants), $132; strut cuffs and tie-down rings, $30; 18-gal. aux tank, $200; transistorized AutoControl for Super Custom only, $800, and AutoNav for Custom model, $395.

Mr. Piper said the Colt is intended as a sport-training plane and believes it will have as much impact on modern-day aviation as did the famous Cub after its introduction 30 years ago. "Aviation has been clamoring for a low-cost airplane which can be used for sport and vacation flying, for the salesman who has a large territory to cover, for the flying clubs which are springing up in large numbers, and for the flying service operator," he commented.

MEYERS MODEL 145

(Continued from page 54)

that we began taking firm orders several months ago," Al says. "Our plans are to have the first production model off the line by the end of January. We continually receive praise from owners of the 35 Model 145's still flying. They get excellent performance with those planes. Our new 145 will have a number of refinements." He did not release full details.

Meyers said he plans to distribute the 145 through dealers who now handle only 4-place and larger planes "because we want to keep the price as low as possible."

World's leading Aero Commander Distributor

JOHN BAUMANN
General Manager

SANTA MONICA AVIATION, INC.
3011 Airport Avenue, Santa Monica, California

COMPLETE KIT only $36.00 F.O.B. Chicago

All materials in spray-cans — fire-safe. Includes: 4 cans Cleaner, 2 cans Penetrant, 2 cans Developer, cleaning brush, instructions — in rugged steel carrying case. Replacement materials available, ask for details. Price: Continental U.S.A. only and Hawaii—F.O.B. our plant, Chicago, Ill., plus local taxes.

FOR SAFETY use
Spotcheck®
by MAGNAFLUX
low-cost
DYE PENETRANT INSPECTION

FIND CRACKS—before they cause accident or breakdown.

Check aluminum control fittings, attachment fittings, wheels, landing gear, engine parts, crank case and pistons, etc. — during major overhaul or in routine maintenance.

Spray on Spotcheck Cleaner, Penetrant, Developer. Complete test takes just a few minutes per part — costs just a few pennies. Every dangerous defect pops out in bright red against white background; can't be overlooked. Be sure, with Spotcheck — a standard safety and maintenance test used by hundreds of aircraft operators and airlines, and thousands of industrial plants.

ORDER FROM YOUR DISTRIBUTOR— or direct

MAGNAFLUX CORPORATION
A Subsidiary of General Mills

7344 W. Ainslie Avenue • Chicago 31, Illinois
Branches and Commercial Inspection Stations in Fifteen Principal Cities

JUST AMONG OURSELVES

(Continued from page 20)

pamphlet than a book. Now the rules require a bookcase to house and a Philadelphia lawyer to understand. Maybe the Indiana law professor can start a movement toward complete simplification of rules as well as simplification of their codification. But we fear this won't happen. Rules are like taxes — once implanted they are never removed.

NEW CESSNA LINE

(Continued from page 30)

increased about 15%. A two-piece hat shelf is provided over the baggage compartment, with the forward section easily removed for installation of an optional child's seat or to increase baggage capacity. Cabin door locks have been modified using flush inside door handles and semi-flush automotive type window latches to insure positive locking while increasing useful cabin area. Interior colors are gold and brown with beige headliner and beige "foam step" carpeting. Two-color exterior striping is used for the first time, with four combinations offering gray and pearl, brown and yellow, dark green and pearl and red and pearl.

The trainer and commuter versions have the Narco Superhomer as standard and in exchange it can be replaced with the Narco Omnigator, King KY-90 and Sunair S5-DTR. Other standard equipment on the trainer is a sensitive altimeter, turn and bank indicator, rate of climb, clock, outside air temperature gauge, dual controls, landing light, sun visors, control lock and cigarette lighter. The commuter carries the same standard equipment as the trainer, except for dual controls, plus a vacuum system with direction and horizon gyros and rotating beacon.

Available as optional equipment are completely adjustable individual seats with 14 combinations of tilt and length adjustment in flight.

Model 185 Skywagon Workplane

A heavier, more powerful single-engine workplane, the Model 185 Skywagon, has been developed from the Cessna 180, will carry 6 adults plus 270 lbs. of extra weight with full fuel tanks. It is powered with a 260-hp. fuel-injected Continental IO-470-F engine and has a useful load of 1,680 lbs. at a gross weight of 3,200 lbs. Top speed is 176 mph. and cruising speed is 164 mph. on 70% hp. at 8,000 ft., with 770-mile range on 60 gals. of fuel at 164 mph., or 1,005-mile range on 81 gals. of fuel at 164 mph. Rate of climb is 1,000 fpm. and service ceiling is 17,300 ft.

The tail-wheel-equipped Skywagon is also available on floats or skis. It is intended for expanded mission and performance requirements and customers desiring to carry heavy payloads. It has three-quarter-inch spring steel landing gear and heavy-duty axles, with choice of 6.00 by 6 or 8.00 by 6 wheels with 6-ply tires and 10-in. tail wheel.

Priced at $18,950 for the standard version, the 185 is available with five different interior arrangements: (1) with pilot seat only as standard, (2) co-pilot seat for 2-place freight version, (3) co-pilot seat plus two 2-place rear seats as 6-place version, (4) co-pilot plus regular 2-place rear seat as 4-place version, and (5) a 4-place

Is Your Aircraft FOR SALE?

Let my 15 years Successful Sales Experience WORK for YOU!

20,000 potential purchasers

5% Brokerage Fee if I sell it — no penalty if I do not

You are assured prompt results from my extensive advertising.

delphine Bohn

MArket 6-1957 Box 4037

Fort Worth, Texas

HOT BLAST

2000 W CAP. 110 V.

AIRPLANE ENGINE WARMER

This Electric HOT-BLAST Airplane engine pre-warmer is manufactured in models to fit all Beech Bonanzas, Cessna 140, 170, 175, 180 and 310 Twin and Piper Pacer and Tri-Pacer.

The heater mounts on the front of the Aircraft cowl in thirty seconds and recirculates the air in a continuous cycle under the cowl to the heater and back over and over again therefore immediately starting a heat-gain.

Heater nose is foam rubber padded to protect the plane's finish, has automatic adjustable thermostat, fuses, two 1000-watt heating elements creating 6,824 B.T.U.'s of heat per hour.

Unit is completely portable, operates on 110 volts and weighs less than 16 lbs.

Specify make and model when ordering.

Order direct from the manufacturer at ONLY

$109.95 F. O. B. Factory

Dealer Inquiry Invited

GARRETT Mfg. Co., Inc.

112 N. Norton St.

Norton, Kansas, U. S. A.

P. O. Box 272 Tele. WA 7-3442

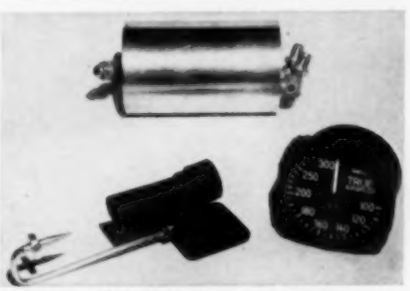
READY NOW TO INSTALL

HUNTER TRUE AIRSPEED

It tells you how fast your airplane flies at any altitude. No computer is necessary.

Everybody wants to know how fast they're going — Hunter True Airspeed shows **true** speed at a glance. Order yours now! Price: $250 including complete unit, installation kit and instructions.

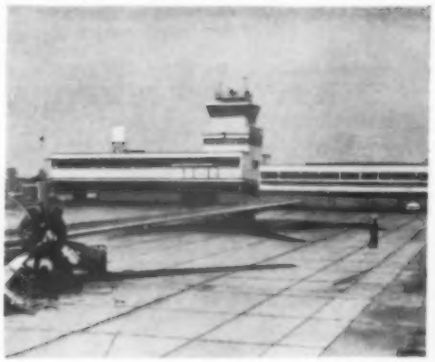
- *Easy to install*
- *Weighs only 16 ounces*
- *Kit and instructions*



Distributors and Dealers wanted

HUNTER AERO INSTRUMENT CO.

Box 7055 — Tulsa, Okla. — RI 7-5965



SHV

The new Greater Shreveport Municipal Airport is a modern facility accommodating 36 commercial flights daily. Downtown Airport, formerly the municipal airport, located about 7 minutes from midtown is now used to house and accommodate planes, privately owned and operated. There are over 190 general aviation aircraft based in this area.

Wherever there is air activity you may be sure that much of it is insured with the "U.S. Group", the pioneer organization which has faithfully served the aviation market continually for over a quarter century.

Be sure that you too have the lasting security of "U.S. Group" protection. Coverage is quickly and conveniently arranged through your own agent or broker.

USAIG

UNITED STATES AVIATION UNDERWRITERS
INCORPORATED
110 WILLIAM ST. • NEW YORK 38, N. Y.

AIRCRAFT & ELECTRONIC DEALERS ASSOCIATION has been organized at Los Angeles as a national association of distributors pledged to higher standards in sales of new and surplus aircraft and electronic parts and equipment. Officers shown above, left to right, are Dar Kindred, Kindred Aviation, vice president; Ben Held, legal counsel; Miss Claire Hughes, Flite-Tronics, vice president; Norman Semler, Semler Industries, president, and Alex Moshansky, Anglo-American Trading Co., secretary. Chief business of members is surplus equipment.

version with deluxe upholstery and fabrics in choice of green or copper. Also available is a new utility interior in shadow tan stripe of cleanable plastic.

A third cabin window on each side provides visibility for rear seat occupants. The cabin door has quickly removable hinge pins for easy cargo handling and Camlock-fastened cowling for easy access to the engine compartment. Edo floats are available as optional equipment, as are a wheel-ski installation incorporating a hydraulic system for ski retraction or extension. For agricultural operations, Sorenson spray equipment can be installed. Standard equipment includes a combination gravity and engine-driven fuel pump system, large oil cooler and rotating beacon. First deliveries of the 185 are scheduled for March, 1961.

All of the aircraft manufactured by Cessna are powered by Continental engines. Continental Motors and many other suppliers to Cessna displayed their products during the Cessna sales meeting.

Cessna reported it is now represented in the field by approximately 400 sales and service outlets throughout the world. There are 40 domestic distributors and the number of retail dealer outlets in the United States and Canada totals more than 300. They employ over 1,000 salesmen. In addition, there are 90 Cessna outlets in 75 countries of the free world.

IN . . .

DALLAS

TUNE TO **111.4** MC FOR A DIRECT APPROACH TO CONVENIENCE AND TIME SAVING FOR YOUR DALLAS BUSINESS

ADDISON AIRPORT

FOR SALE
Lockheed Lodestar N74Y
$50,000
WILL TRADE OR LEASE

Just completely rewired. New instrument panel, new stainless steel commissary, custom interior with 4 chairs and 3-pl. divan, bulkheads removed in cockpit, new 3-way adjustable C46 pilot chairs, Goodyear wheels and brakes, tail modified to Learstar conversion with saddleback, 851-gal. fuel capacity, beautiful paint job, 2 Wright 1820-56W engines, 1,300 hp. each, with 33D-50 propellers, 1 spare engine overhauled, with spare parts. Immediate delivery.

Can be seen at Redbird Airport.

Poddy Parish Aviation Co.
Office in Terminal Bldg., Redbird Airport
Tel. FEderal 9-0121 DALLAS, TEXAS

Arizona's Airport
TUCSON

BUSINESS AIRCRAFT
VALID $$$$ VALUES

All makes and models
FOR SALE
Aircraft history checked
BETTER PRICES
15 years selling experience.
Leasing and financing

delphine Bohn
MArket 6-1957 Box 4037
Fort Worth, Texas

New cabin conversion has door in canopy, pilot seat and two 2-place seats in Hamilton Aircraft's T-28. Cabin interior length is 102 ins. from rudder pedals to rear seatback. Seats are 35-36 ins. wide.

T-28 Conversion With Big Engine, 5 Seats

HAMILTON Aircraft Company, Tucson, is marketing a high-performance 5-place conversion of the military-surplus 2-place North American Aviation T-28 trainer for $25,000-$30,000.

Gordon B. Hamilton, president of the firm, said his T-28 conversion is powered with a Wright 1820-series engine rated from 1,200 through 1,425 hp. for take-off and from 1,000 through 1,275 hp. for maximum continuous operation.

With the big DC-3 engine, the Hamilton conversion is said to cruise 280 mph. at 10,000 ft. using 700 hp. and up to 300 mph. at altitude. Stall speed is 60 mph. with power on and gear and flaps down, giving it a 5 to 1 speed range.

With a 200-gal. fuel capacity, it has a 950-mile range at 10,000 ft., cruising 280 mph. The big engine gives it a rate of climb of 4,000 feet per minute at sea level and 3,200 feet per minute at 5,000 ft.

Power loading is comparable to that of fighter aircraft — 5.4 lbs. per horsepower. Wing loading is 26 lbs. per sq. ft. Wing area is 295 square feet.

A new cabin and canopy arrangement provides seating for 5 persons, with two seats behind the pilot. These two-place seats are 36 ins. and 35 ins. wide. Cabin length from the rudder pedals to the rear seatback is 102 inches.

At a gross weight of 7,600 lbs., the T-28 conversion offers a useful load of 2,000 lbs., empty weight being 5,600 lbs.

NEW LOCKHEED-AZCARATE LASA-60 WORKPLANE is in production at new Azcarate factory in San Luis Potosi, Mexico, and first prototype airplane left Burbank recently for 8,000-mile flight to Argentina, where Aviones Lockheed-Kaiser Argentina will manufacture it at Cordoba. Aldo Pascual, Argentine pilot, flew the ferry trip, dropping off in Mexico City Colonel Alfonso Gandarilla, chief Azcarate pilot. A third factory, Lockheed affiliate Aeronautica Macchi, is tooling up to build the Model 60 in Varese, Italy.

TURBINE-POWERED BELL HU-1A IROQUOIS has been chosen by the U. S. Army as its new helicopter instrument trainer. Fourteen of the HU-1A's were odered for instrument training.

Plenty of Parts for
Convair DC3-C47
Beech Lodestar

A.R.C. Pratt & Whitney Accessories
Bendix Wright Instruments
Collins Continental De-icers, Tires
Sperry R.C.A. Standard Parts

Write or Call — Air Express Service

NAVCO Inc.
Lambert Field
St. Louis, Mo.
PErshing 1-1710

IFR HOOD

First in Safety! First in Comfort!
First in Pilot's Choice
The modern method of simulated instrument flight for training and maintaining proficiency.
$15.00 at your Airport or
FRANCIS AVIATION
Box 299 Lansing, Michigan

WE BUY TWINS
CASH NOT CONVERSATION
THERE IS A DIFFERENCE!
One or complete dealer stocks, new or used. We'll buy over the phone. No Red Tape. We pick up. Send for our free list of buys.
VEST AIRCRAFT CO.
Box 5306
EM 6-2663 Denver, Colo.

RETAIL FINANCING
ON RECENT MODEL SINGLE AND LIGHT TWIN ENGINE AIRCRAFT
12 Months to 36 Months
Call or Write
AIRCRAFT FINANCE CO.
First National Bank Bldg. • Phone KI 4-1753
Springfield, Illinois

MATTITUCK AIRBASE CORP.
BETTER AIRCRAFT MAINTENANCE
F.A.A. APPROVED REPAIR
STATION #3569
AIRFRAME CLASS 3
LIMITED CLASS 4
CUSTOM INTERIORS & PAINTING,
CONVERSIONS & EXPERIMENTAL MODIFICATIONS,
MAJOR OVERHAUL & INSPECTIONS
LINDEN AIRPORT—LINDEN, N. J.
Hunter 6-8800 Digby 9-3140

WHAT ?? WHERE HOW MUCH $

1958 TWIN BONANZA F-50

SALE • LEASE • FINANCE

TT 323 hours — Excellent equipment including Wilcox Comm., Dual Omni, G/S, Marker, ADF — One Owner, Immaculate condition — Replacement Cost approximately $129,000.

Price **$66,800**

Call • Wire • Write

GOLDEN GATE AVIATION, INC.
Oakland International Airport
Oakland 14, California NEptune 2-5731

LAWYER-PILOT AVAILABLE

Attorney desires change. Family. Fourteen years insurance experience in claims and underwriting. Extensive aviation experience. Commercial pilot with multi-engine, instructor, and instrument ratings.

Write FLIGHT MAGAZINE, P. O. Box 750
Department G, Dallas 21, Texas

CONVAIR 240 AIRLINE INTERIOR

EXECUTIVE DC3 - 1830-94 - TT9000
Will Finance or Lease

VISCOUNT EXECUTIVE - TT-1500
Radar — Autopilot
Immediate Delivery

SUPER WIDGEONS

GRUMMAN GOOSE

WELSCH AVIATION CO.
1213 Marine Terminal Bldg.
LaGuardia Airport
P. O. Box 29 Flushing 71, New York

CONVAIR 240

- New Executive Interior
- New Exterior Paint
- New License
- Zero Time Power Plants

$195,000

Frederick B. Ayer & Associates, Inc.
250 Park Avenue
New York 17, New York

YOU — Will be surprised!
YES — We're sure you will be!
WHEN — You see what a "buck" or a hundred "bucks" will buy in our NEW 1960 Catalog of Sport Parachuting Equipment. Bargains! It's loaded!

FILL OUT AND MAIL COUPON TODAY
—Please Print—
Send 1960 Bargain Catalog to:

NAME_____
ADDRESS_____
CITY_____ STATE_____

McELFISH PARACHUTE SERVICE
2615 Love Field Drive
Dallas 35, Texas

HELICOPTERS for SALE

S-55 SIKORSKY HELICOPTERS, 3 available. This is not a paint job overhaul — all parts certified new or new O/H. Blueprints available for all components to substantiate certification.

BELL 47-D1, G, G2 — 8 available. Zero since major O/H — price $16,000 to $25,000.

Complete line of parts for Bell and Sikorsky in stock.

We are the owners of above equipment.

CHAS. LINZA, 3009 Roxanne Ave.
Long Beach, Calif.
GA 7-9817 HA 1-4031

THE PLACE TO STOP
RALEIGH-DURHAM
NORTH CAROLINA

SPRINGER BLACK BOX
Crystal Tuning for ARC Type 15 Systems
SPRINGER AIRCRAFT RADIO CORP.
2200 N. Post Road
Indianapolis 19, Indiana

EXECUTIVE
DeHAVILLAND DOVE
TOTAL TIME 1146 HRS.
P. O. Box 750 "E"
Flight Magazine, Dallas, Texas

PBY 5A
Two amphibians converted for 2 crew — cargo — passenger use.
P. O. Box 750 "B"
Flight Magazine, Dallas, Texas

SOMETHING TO SELL???
OR
LOOKING FOR A BUY???
The classified pages of FLIGHT Magazine will get prompt results. $10 per inch.
Send ad copy to
FLIGHT MAGAZINE
P. O. Box 750 Dallas 21, Texas

OXYGEN EQUIPMENT
SALES & SERVICE
REGULATORS—MASKS—VALVES
PORTABLES & CYLINDERS
FIXED INSTALLATIONS
GOVT. APPROVED REPAIR STATION
ZEP AERO Phone: ORegon 8-1161
EL SEGUNDO, CALIFORNIA

Aircraft Title Searches
Airmen Record Information
Recording Services

AERO RECORDS & TITLE CO.
CRAVENS BLDG.
OKLAHOMA CITY, OKLA. CEntral 9-2507

Sale — Overhaul — Exchange

CA18 CB16 CB17

P&W R2800 R2600 Wright
P&W R1830 R1820 Wright
P&W R1340 GO480 Lycoming
P&W R985 0470 Continental
Super-92

ENGINE WORKS
Lambert Field Inc. St. Louis, Mo.

EXECUTIVE LOCKHEED
LODESTAR
$32,500
Total time 4200 hours
Will accept post-war Beechcraft in trade
For full description write or call
SOUTHERN AIRWAYS COMPANY
Atlanta Airport, Atlanta, Ga., POplar 7-3766

1959 AERO COMMANDER 500

Low time since major overhaul, Deluxe 7 place interior with hassock/icebox. 1 owner. All crystal controlled radios. Dual omni, ILS. ARC 21 ADF, speaker. ISO amp. Deicers. Asking $65,000.

Call K. F. KELLY
LA 5-2000 or SK 6-1801, Mansfield, Ohio

NOTICE

We Are Moving To Larger Offices

After Oct. 1, 1960 Our Address Will Be

Welsch Aviation Company
1213 Marine Terminal Bldg.
P. O. Box 29, LaGuardia Airport
Flushing 71, New York
Phone: TWining 8-5420

OUTSTANDING TWIN-BONANZAS FOR SALE

D-50. 1957, T. T. 575 hrs., 295 h.p. engines since factory remanufacture 160 & 211 hrs. 3-blade props. Nose taxi lite, beacon, super soundproofing, L-2 autopilot, excellent radio. 6-place. Individual front seats, 3-place couch and one airline-type chair. One corporate owner. Priced to move quickly.

Call Wilmington, Delaware EAst 8-611
ATLANTIC AVIATION CORPORATION
New Castle Airport Wilmington, Del.

B-50. 1950. T. T. 1900 hrs. Newly remanufactured engines, overhauled props, completely reupholstered and repainted. Excellent radio. Mitchell autopilot. Fresh 100 hour check. Terrific small field performance. Like brand new condition. Low price.

Call Boston, Mass. LOgan 7-8700
ATLANTIC AVIATION CORPORATION
Logan Airport Boston, Mass.

Our Executive Aircraft Display

has MOVED to

POMPANO AIRPORT—

our southern exposure—for the winter

Immediate delivery. Come in and see them, and fish, swim, golf, or relax while you think it over.

Call Pompano Beach, Florida — WEbster 3-4516

Convair — Freshly overhauled CB16 engines with ferry time only. Beautiful executive interior. Now in conversion at Pompano, in final stages.

Convair — CA18 engines with no time since overhaul. Deluxe executive interior. One of best in country. At Pompano.

Convair & Martin Engineering — and/or installation of autopilot, radar, radome, wing tanks, and other features in Convair 240, 340, 440, and Martin 4-0-4.

Convair Parts, Engines, Props — over $1,000,000 worth in our own warehouses, available to you at low dealer prices. Write for our list.

Super-92 DC3 — Just received in trade on Remmert-Werner Convair. NTSO engines, new paint, executive interior, RW gear doors, dual Collins omnis, Sperry gyrosyn, dual A.R.C. 21 ADF, etc. $89,500 in St. Louis.

Super-92 DC3 — Deluxe executive, fresh overhaul. RW landing gear doors, luxurious interior with picture windows. Radome, dual Collins omnis, custom panels. New ship guarantee. At Pompano.

2 C47s — Cargo-passenger. Both newly overhauled, P&W engines, cargo doors, heavy gears, new paint, Collins omni, etc. One in St. Louis, one in Pompano.

DC3 — RW gear doors, Hayes brakes, new paint, new interior with 8 double chairs, 4 single, 3 tables, aux. heater, etc. Dual hydraulic system, dual instrumentation, etc. At St. Louis, $49,500.

DC3s — Others also available. Can certify for FAA Part #42 or #45, and help prepare manual.

680 Aero Commander — 7 place, radome nose, dual panel, H5 horizon, Collins 17L8-51X3 VHF, A.R.C. 210 VHF, dual A.R.C. omni with Course Director, dual A.R.C. 21 ADF, iso-amp. At Pompano.

520 Aero Commander — Collins 51R3, omni de-icers, 5 seats, 5700 gross. At Trenton, $24,000.

Grumman Goose — Low time, recent engine OH and deluxe executive conversion, Hartzell props, metal wings, omni, VHF, ADF, LF, etc. At Pompano.

UH12B Hillercopter Super — New 200 HP engine, new upholstery, custom interior, dual controls, night kit, VHF, transportation trailer. At St. Louis, $19,875.

S-51 Sikorsky Helicopter — Low component time. Flyaway, St. Louis, $9,850.

S51 Helicopter — Executive, plush interior, NTSO engine, at St. Louis, $35,000.

Apache — Dual omni, ADF, ILS, Grimes, etc. At Pompano, $14,885.

Custom 18 Twin Beech — **1953 Model.** Fresh NTSO airframe, engines, hydromatics, with all AD Notes. Gear doors, airstairs, large picture windows, enlarged cabin, Custom 18 interior, Collins omni, gyrosyn compass, A.R.C. 210 VHF, electric T&B, many extras. A beautiful airplane with new ship guarantee, less than a third the cost of new. At Pompano.

D18S Twin Beech — 1950 model. Fresh NTSO engines, hydromatic props, 80 gal. nose tank, dual omni, de-icers, excellent interior, cabin radio. At St. Louis, $29,885.

D18S Twin Beech — 1953 model, hydromatics, Collins 17L8-51X3 VHF, dual omni, new interior, couch, 3 seats, cabin instruments and speaker, 80 gal. nose tank. At Pompano.

D18S Twin Beech — Excellent interior, de-icers, hydromatics, 80 gal. nose tank, cabin radio, dual omni, HF, etc. At St. Louis, $19,885.

B50 Twin Bonanza — Just traded in. Dual omni, Course Director, VHF, ADF, etc. Very clean inside and out. At St. Louis, $23,500.

Apache — Just received in trade. Will have specs when you read this. In St. Louis.

Also DC3s and D18Ss for short or long term wet or dry lease

Remmert-Werner

St. Louis	Florida	Toledo	Trenton
Lambert Field	Pompano Airport	Express Airport	Mercer Airport
PErshing 1-2260	WEbster 3-4516	UNiversity 5-2328	TUxedo 2-6500

Check these *Riley Firsts* among light Executive Twins!

- True High-Lift Airfoil Aft Engine Nacelles
- Non-Corrosive Fiberglass Nacelle Auxiliary Fuel Tanks
- New Modern "Free-Flow" Exhaust System Eliminating Old Augmentors
- New One-Piece Panoramic Windshield
- New Bond-Tite Aerodynamic Surface Smoothing
- New Couch with 30-second Convertibility to Individual Forward-Facing Seats
- New Third Windows for Cabin

Why not get out in *Front and stay there*... let Riley Super Customize your 310!

Tomorrow's Ideas Today with Quality All the Way

Riley Aircraft, Inc.

VISIT: Riley's Ramp, Broward County International Airport • CALL: JA 2-0632 • WRITE: Box 5019, Ft. Lauderdale, Fla.

VISIT: Riley's Ramp, Broward County International Airport • CALL: JA 2-0632 • WRITE: Box 5019, Ft. Lauderdale, Fla.